	Type	L #	Hits	Search Text	DBs
1	BRS	L1	220143	(label or probe or tag) same (measure or measuring or measured or sense or sensing or sensor or detect or detection or detector or detecting or monitor or monitoring)	US-PGPUB; USPAT
2	BRS	L2	16183	(label or probe or tag) same (measure or measuring or measured or sense or sensing or sensor or detect or detection or detector or detecting or monitor or monitoring) with current	US-PGPUB; USPAT
3	BRS	L3	1577	(label or probe or tag) same (measure or measuring or measured or sense or sensing or sensor or detect or detection or detector or detecting or monitor or monitoring) with electrical near8 current	US-PGPUB; USPAT
4	BRS	L4	360	(label or probe or tag) same (measure or measuring or measured or sense or sensing or sensor or detect or detection or detector or detecting or monitor or monitoring) with electrical near8 current same electrode	US-PGPUB; USPAT
5	BRS	L5	2810	(label or probe or tag) same (measure or measuring or measured or sense or sensing or sensor or detect or detection or detector or detecting or monitor or monitoring) with current same electrode	US-PGPUB; USPAT

	Type	L #	Hits	Search Text	DBs
6	BRS	L6	1410	5 and (chip or biochip or wafer or substrate) same (electrode or microelectrode or contact or pad or lead)	US-PGPUB; USPAT
7	BRS	L7	276	6 and nucleic near8 acid	US-PGPUB; USPAT
8	BRS	L8	339	5 and nucleic near8 acid	US-PGPUB; USPAT
9	BRS	L9	205	7 and (hybridize or hybridization)	US-PGPUB; USPAT
10	BRS	L10	253	8 and (hybridize or hybridization)	US-PGPUB; USPAT
11	BRS	L11	86	9 and (intercalation or intercalator)	US-PGPUB; USPAT
12	BRS	L12	117	10 and (intercalation or intercalator)	US-PGPUB; USPAT
13	BRS	L13	34	7 and electron near8 transfer near8 moiet$9	US-PGPUB; USPAT
14	BRS	L14	63	8 and electron near8 transfer near8 moiet$9	US-PGPUB; USPAT
15	BRS	L15	28	13 and transition near8 metal near8 complex$9	US-PGPUB; USPAT
16	BRS	L16	57	14 and transition near8 metal near8 complex$9	US-PGPUB; USPAT
17	BRS	L18	35	16 and metallocene?	US-PGPUB; USPAT
18	BRS	L17	23	15 and metallocene?	US-PGPUB; USPAT

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NEWS 4	AUG 28	ADISCTI Reloaded and Enhanced
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NEWS 6	SEP 11	CA/CAplus enhanced with more pre-1907 records
NEWS 7	SEP 21	CA/CAplus fields enhanced with simultaneous left and right truncation
NEWS 8	SEP 25	CA(SM)/CAplus(SM) display of CA Lexicon enhanced
NEWS 9	SEP 25	CAS REGISTRY(SM) no longer includes Concord 3D coordinates
NEWS 10	SEP 25	CAS REGISTRY(SM) updated with amino acid codes for pyrrolysine
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NEWS 14	OCT 23	Option to turn off MARPAT highlighting enhancements available
NEWS 15	OCT 23	CAS Registry Number crossover limit increased to 300,000 in multiple databases
NEWS 16	OCT 23	The Derwent World Patents Index suite of databases on STN has been enhanced and reloaded
NEWS 17	OCT 30	CHEMLIST enhanced with new search and display field
NEWS 18	NOV 03	JAPIO enhanced with IPC 8 features and functionality
NEWS 19	NOV 10	CA/CAplus F-Term thesaurus enhanced
NEWS 20	NOV 10	STN Express with Discover! free maintenance release Version 8.01c now available
NEWS 21	NOV 13	CA/CAplus pre-1967 chemical substance index entries enhanced with preparation role
NEWS 22	NOV 20	CAS Registry Number crossover limit increased to 300,000 in additional databases
NEWS 23	NOV 20	CA/CAplus to MARPAT accession number crossover limit increased to 50,000
NEWS 24	NOV 20	CA/CAplus patent kind codes will be updated
NEWS 25	DEC 01	CAS REGISTRY updated with new ambiguity codes

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FIELD CODE - 'AND' OPERATOR ASSUMED 'LABEL) (P) '
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'LABEL) (P) '
L1      322984 (PROBE OR TAG OR LABEL) (P) (MEASUR? OR SENS? OR DETECT? OR
               MONITOR?)

=> s l1 and electron (8w) transfer (8w) moiet?
L2          27 L1 AND ELECTRON (8W) TRANSFER (8W) MOIET?

=> duplicate remove l2
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PROCESSING COMPLETED FOR L2
L3           23 DUPLICATE REMOVE L2 (4 DUPLICATES REMOVED)

=> display l3 1-23 ibib abs

L3   ANSWER 1 OF 23  CAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2006:787541  CAPLUS
DOCUMENT NUMBER:          145:227035
TITLE:                    Binding acceleration techniques for the detection of
                          analytes
INVENTOR(S):              Blackburn, Gary; Vielmetter, Jost G.; Kayyem, Jon Faiz
PATENT ASSIGNEE(S):       Clinical Micro Sensors, Inc., USA
SOURCE:                   U.S., 86pp., Cont.-in-part of U.S. Ser. No. 440,371,
                          abandoned.
                          CODEN: USXXAM
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   3
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.          DATE
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     US 7087148            B1    20060808    US 2000-712792           20001113
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US 6290839	B1	20010918	US 1998-134058	19980814
US 6264825	B1	20010724	US 1999-338726	19990623
US 6761816	B1	20040713	US 2000-520477	20000308
US 2005003399	A1	20050106	US 2004-823503	20040412
US 2005244954	A1	20051103	US 2005-83780	20050316

PRIORITY APPLN. INFO.:

US 1998-90389P	P	19980623
US 1998-134058	A2	19980814
US 1999-338726	A2	19990623
US 1999-440371	B2	19991112
US 1999-171981P	P	19991223
US 2000-520477	A1	20000308

AB The invention relates to compns. and methods useful in the acceleration of binding of target analytes to capture ligands on surfaces. Detection proceeds through the use of an electron transfer moiety (ETM) that is associated with the target analyte, either directly or indirectly, to allow electronic detection of the ETM. Electrodes of a devices were spotted with thiolated DNA and the device was tested with hybridization solution containing target DNA and signaling probe.

REFERENCE COUNT: 465 THERE ARE 465 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:264240 CAPLUS

DOCUMENT NUMBER: 144:306413

TITLE: Conductive oligomers attached to electrodes and nucleoside analogs

INVENTOR(S): Kayyem, Jon Faiz; O'Connor, Stephen D.; Gozin, Michael; Yu, Changjun; Meade, Thomas J.

PATENT ASSIGNEE(S): Clinical Micro Sensors, Inc., USA

SOURCE: U.S., 71 pp., Cont.-in-part of U.S. Ser. No. 743,798. CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 7014992	B1	20060321	US 1997-873978	19970612
US 6096273	A	20000801	US 1996-743798	19961105
US 6090933	A	20000718	US 1997-911085	19970814
CA 2270633	AA	19980514	CA 1997-2270633	19971105
WO 9820162	A2	19980514	WO 1997-US20014	19971105
WO 9820162	A3	19981112		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9851967	A1	19980529	AU 1998-51967	19971105
AU 739375	B2	20011011		
EP 939762	A2	19990908	EP 1997-946876	19971105
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2001507930	T2	20010619	JP 1998-521668	19971105
US 7045285	B1	20060516	US 2000-557577	20000421
US 6479240	B1	20021112	US 2000-577429	20000522
AU 780739	B2	20050414	AU 2002-10169	20020114
US 2003003473	A1	20030102	US 2002-81936	20020220

US 6977151	B2	20051220			
US 2003150723	A1	20030814	US 2002-236481		20020905
US 7125668	B2	20061024			
US 2003148328	A1	20030807	US 2002-241376		20020911
US 7056669	B2	20060606			
US 2006099631	A1	20060511	US 2005-295993		20051206
US 2006211016	A1	20060921	US 2006-343462		20060130
PRIORITY APPLN. INFO.:			US 1996-743798	A2	19961105
			US 1997-40155P	P	19970307
			US 1997-873597	A	19970612
			US 1997-873978	A1	19970612
			US 1997-899510	A	19970724
			US 1997-911085	A	19970814
			US 1997-911589	A	19970814
			AU 1998-51967	A3	19971105
			WO 1997-US20014	W	19971105
			US 2000-557577	A1	20000421
			US 2000-577429	A1	20000522
			US 2000-660374	A1	20000912

AB The invention relates to nucleic acids covalently coupled to electrodes via conductive oligomers. More particularly, the invention is directed to the site-selective modification of nucleic acids with metallocene electron transfer moieties and electrodes to produce a new class of biomaterials which allow the long-distance electron transfer through a double-stranded nucleic acid. In general, electron transfer between electron donors and acceptors does not occur at an appreciable rate when the nucleic acid is single-stranded, nor does it occur appreciably unless nucleotide bas pairing exists in the double-stranded sequence between the electron donor and acceptor in the double-helical structure. Thus, the invention is directed to the use of nucleic acids with electron transfer moieties , including electrodes, as probes for the detection of target sequences within a sample. Synthetic schemes are described for conductive oligomers covalently attached to a uridine nucleoside to at least one metallocene moiety (i.e. ferrocene) via an amine bond, via the base, or via a phosphate of the ribose-phosphate backbone.

REFERENCE COUNT: 374 THERE ARE 374 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 3 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2005:1141732 CAPLUS
DOCUMENT NUMBER: 144:46787
TITLE: Novel Bifunctional Acridine-Acridinium Conjugates: Synthesis and Study of Their Chromophore-Selective Electron-Transfer and DNA-Binding Properties
AUTHOR(S): Kuruvilla, Elizabeth; Joseph, Joshy; Ramaiah, Danaboyina
CORPORATE SOURCE: Photosciences and Photonics Division, Regional Research Laboratory, Trivandrum, 695 019, India
SOURCE: Journal of Physical Chemistry B (2005), 109(46), 21997-22002
CODEN: JPCBFK; ISSN: 1520-6106
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 144:46787

AB Novel bifunctional conjugates 1-3, with varying polymethylene spacer groups, were synthesized, and their DNA interactions have been investigated by various biophys. techniques. The absorption spectra of these systems showed bands in the regions of 300-375 and 375-475 nm, corresponding to acridine and acridinium chromophores, resp. When compared to 1 (Φf = 0.25), bifunctional derivs. 2 and 3 exhibited quant. fluorescence yields (Φf = 0.91 and 0.98) and long lifetimes

(τ = 38.9 and 33.2 ns). The significant quenching of fluorescence and lifetimes observed in the case of 1 is attributed to intramol. electron transfer from the excited state of the acridine chromophore to the acridinium moiety. DNA-binding studies through spectroscopic investigations, viscosity, and thermal denaturation temperature measurements indicate that these systems interact with DNA preferentially through intercalation of the acridinium chromophore and exhibit significant DNA association consts. (KDNA = 105-107 M-1). Compound 1 exhibits chromophore-selective electron-transfer reactions and DNA binding, wherein only the acridinium moiety of 1 interacts with DNA, whereas optical properties of the acridine chromophore remain unperturbed. Among bifunctional derivs. 2 and 3, the former undergoes DNA mono-intercalation, whereas the latter exhibits bis-intercalation; however both of them interact through mono-intercalation at higher ionic strength. Results of these investigations demonstrate that these novel water-soluble systems, which exhibit quant. fluorescence yields, chromophore-selective electron transfer, and DNA intercalation, can have potential use as probes in biol. applications.

REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 4 OF 23 INSPEC (C) 2006 IET on STN

ACCESSION NUMBER: 2006:8786069 INSPEC

TITLE: Photoinduced electron- and energy-transfer processes of [60]fullerene covalently bonded with one and two zinc porphyrin(s): effects of coordination of pyridine and diazabicyclooctane to Zn atom

AUTHOR: Sandanayaka, A.S.D.; (Inst. of Multidisciplinary Res. for Adv. Mater., Tohoku Univ., Sendai, Japan), Ikeshita, K.; Araki, Y.; Kihara, N.; Furusho, Y.; Takata, T.; Ito, O.

SOURCE: Journal of Materials Chemistry (21 June 2005), vol.15, no.23, p. 2276-87, 35 refs.
CODEN: JMACEP, ISSN: 0959-9428
SICI: 0959-9428(20050621)15:23L.2276:PEET;1-A
Published by: R. Soc. Chem, UK

DOCUMENT TYPE: Journal

TREATMENT CODE: Experimental

COUNTRY: United Kingdom

LANGUAGE: English

AN 2006:8786069 INSPEC

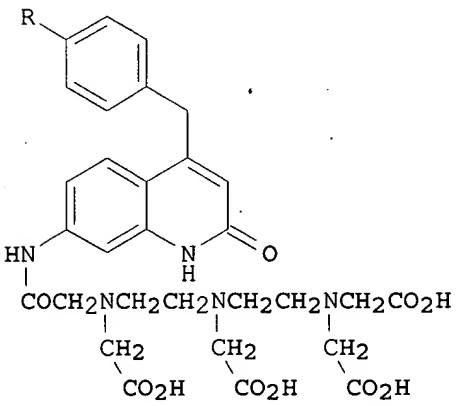
AB C60-zinc porphyrin (ZnP) dyad (ZnP-C60) and triad (ZnP-C60-ZnP) were synthesized to probe energy-transfer and electron-transfer processes in the absence and presence of pyridine and diazabicyclooctane (DABCO). The syntheses of C60-ZnP and ZnP-C60-ZnP were carried out by Diels-Alder cycloaddition between sulfolene moiety-containing porphyrin and C60. The photoinduced electron-transfer processes between the spatially positioned C60 and ZnP in the dyad and triad systems were investigated by time-resolved transient absorption and fluorescence measurements with changing solvent polarity. Upon excitation of the ZnP moiety, charge separation via an excited singlet state of ZnP takes place competitively with energy transfer to C60 generating the excited singlet state of C60, from which charge-separated states (ZnP.ovrhdot.+-C60.ovrhdot.-) and ZnP.ovrhdot.+-C60.ovrhdot.--ZnP) are also generated in polar solvents. Rates and efficiencies of energy transfer and charge separation for the triad are higher than those of the dyad. The generated charge-separated species recombine with lifetimes in the range of 240-330 ns in polar solvents such as DMF, PhCN, and THF for both dyad and triad. In o-dichlorobenzene, although the lifetimes of charge-separated states are very short (<20 ns), coordination of DABCO and pyridine to ZnP in the dyad and triad producing relatively stable coordinated complexes gives rise to prolongation of the charge-separated states up to 460 ns

L3 ANSWER 5 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:718516 CAPLUS
DOCUMENT NUMBER: 141:253060
TITLE: Preparation of fluorescent DTPA group-containing 2-quinolinol-lanthanide complexes
INVENTOR(S): Kikuchi, Kazuya; Iwasawa, Shinya; Nagano, Tetsuo
PATENT ASSIGNEE(S): Japan Science and Technology Agency, Japan
SOURCE: PCT Int. Appl., 33 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004074254	A1	20040902	WO 2004-JP1680	20040217
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1623979	A1	20060208	EP 2004-711690	20040217
R: CH, DE, FR, GB, LI, SE				
US 2006149043	A1	20060706	US 2006-536382	20060109

PRIORITY APPLN. INFO.: JP 2003-45786 A 20030224
WO 2004-JP1680 W 20040217

OTHER SOURCE(S): MARPAT 141:253060
GI



I

AB Disclosed is a fluorescent lanthanide complex which comprises a substituted 2-quinolinol (I; R = H, NH2, NHAc) having a sensor substituent and a complexing group, and a lanthanide ion (Ln3+). The complexes are stable in water and possesses long-lasting fluorescence but no fluorescence during quenching owing to the complete control of fluorescence, thus minimizing background fluorescence. The fluorescent intensity of the complexes is controlled by the principle of light-induced electron transfer from the electron donating moiety to the fluorescent dye moiety. The complexes are utilized in various applications such as photochem. electron transfer (PET)

chemosensors, through allowing it to be present together with a material to be measured in a liquid phase and measuring the fluorescence thereof.
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 6 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:803869 CAPLUS
DOCUMENT NUMBER: 141:255481
TITLE: Methods for detection of nucleic acids using bioelectronic detectors
INVENTOR(S): Heeger, Alan J.; Fan, Chunhai; Plaxco, Kevin
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 20 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004191801	A1	20040930	US 2003-678760	20031003
WO 2005036133	A2	20050421	WO 2004-US9327	20040325
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2005112605	A1	20050526	US 2004-810333	20040325

PRIORITY APPLN. INFO.: US 2003-457762P P 20030325
AB A reagentless, reusable bioelectronic DNA or RNA sequence sensor is disclosed. The sensor includes a DNA probe tagged with a electroactive, redoxable moiety, self-assembled on or near an electrode. This surface-confined DNA probe structure undergoes hybridization-induced conformational change in the presence of the target DNA/RNA sequence which change the electron-transfer distance between the redoxable moiety and the electrode thereby providing a detectable signal change. In a preferred application, the target sequence is associated with an object and its detection is correlated with the authenticity of the object.

L3 ANSWER 7 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:88270 CAPLUS
DOCUMENT NUMBER: 140:158506
TITLE: Use of ferrocene-containing adenosine compounds for detection of nucleic acids in amplification reactions
INVENTOR(S): Blackburn, Gary; Irvine, Bruce D.; Kayyem, Jon Faiz; Sheldon, Edward Lewis, III; Terbrueggen, Robert H.
PATENT ASSIGNEE(S): Clinical Micro Sensors, Inc., USA
SOURCE: U.S., 144 pp., Cont.-in-part of U.S. Ser. No. 238,351.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

US 6686150	B1	20040203	US 2000-621275	20000720
US 6063573	A	20000516	US 1998-14304	19980127
US 2002006643	A1	20020117	US 1999-238351	19990127
US 7090804	B2	20060815		
US 2003087228	A1	20030508	US 1999-245105	19990127
US 2005053962	A1	20050310	US 2004-746904	20041115
PRIORITY APPLN. INFO.:			US 1998-14304	A1 19980127
			US 1998-73011P	P 19980129
			US 1998-28102P	P 19980316
			US 1998-84425P	P 19980506
			US 1998-84509P	P 19980506
			US 1998-135183	A1 19980817
			US 1999-238351	A2 19990127
			US 1999-144698P	P 19990720
			US 1996-28102P	P 19961009
			US 1998-78102P	P 19980316
			US 2000-621275	A1 20000720

AB The invention relates to compns. and methods useful in the detection of nucleic acids using a variety of amplification techniques, including both signal amplification and target amplification. Detection proceeds through the use of an electron transfer moiety (ETM) that is associated with the nucleic acid, either directly or indirectly, to allow electronic detection of the ETM using an electrode. The ferrocene-containing adenosine compds. were synthesized, incorporated into oligonucleotides, and used in detection of target DNA, e.g., HIV-derived DNA, and detection of 16S rRNA.

REFERENCE COUNT: 243 THERE ARE 243 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 8 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2004:360031 CAPLUS
DOCUMENT NUMBER: 141:84939
TITLE: Mechanism of sequence-specific fluorescent detection of DNA by N-Methyl-imidazole, N-Methyl-pyrrole, and β-Alanine linked polyamides
AUTHOR(S): Rucker, Victor C.; Dunn, Alexander R.; Sharma, Shantanu; Dervan, Peter B.; Gray, Harry B.
CORPORATE SOURCE: Division of Chemistry and Chemical Engineering and the Beckman Institute, California Institute of Technology, Pasadena, CA, 91125, USA
SOURCE: Journal of Physical Chemistry B (2004), 108(22), 7490-7494
CODEN: JPCBFK; ISSN: 1520-6106
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The fluorescence from the tetramethylrhodamine (TMR) moiety in hairpin polyamide-TMR conjugates is quenched in solution, but restored upon sequence-specific binding to doubled-stranded DNA. This fluorescence amplification when bound to the target DNA sequence makes polyamide-TMR conjugates potentially useful for the detection of specific DNA sequences in homogeneous solution Time-resolved and steady-state spectroscopic measurements indicate that a ground-state complex forms between the TMR and polyamide functionalities in the absence of DNA. This intramol. complex likely facilitates electron transfer from the polyamide N-methyl-pyrrole moieties to the TMR excited state, quenching fluorescence. Binding of the polyamide-TMR probe to the target DNA sequence disrupts the TMR-polyamide interaction, resulting in the observed fluorescence increase.

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 9 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:629850 CAPLUS
TITLE: Scanning electrochemical microscopy studies of electron
AUTHOR(S): Bard, Allen J.; Liu, Biao; Creager, Stephen E.; Mirkin, Michael V.
CORPORATE SOURCE: Department of Chemistry and Biochemistry, University of Texas, Austin, TX, 78712, USA
SOURCE: Abstracts of Papers, 226th ACS National Meeting, New York, NY, United States, September 7-11, 2003 (2003), ANYL-191. American Chemical Society: Washington, D. C.
CODEN: 69EKY9
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English

AB Scanning electrochem. microscopy (SECM) was used to measure the rate of electron-transfer between substrate gold electrodes and a ferrocene (Fc) moiety attached to the electrode surface by an alkanethiol bridge through an ester (CO2) or an amide (CONH) linkage. Values of the electron transfer rate consts. determined from SECM were in reasonable agreement with those previously obtained from chronoamperometry and voltammetry. The measurement employs a tip-generated reductant that reacts with the Fc+ and the rate of the bimol. heterogeneous electron transfer between the monolayer-bound Fc+ and the reductant in the aqueous electrolyte was also obtained from the steady-state SECM measurements. SECM could also be used to measure the rate of electron-transfer through nonelectroactive alkanethiol mols. between substrate gold electrodes and a redox probe (Ru(NH3)62+) in the solution SECM images of the self-assembled alkanethiol monolayer suggested that the defects in the monolayer are nanometer-sized in radius.

L3 ANSWER 10 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:64197 CAPLUS
DOCUMENT NUMBER: 134:126767
TITLE: Amplification of nucleic acids with electronic detection
PATENT ASSIGNEE(S): Clinical Micro Sensors, Inc., USA
SOURCE: PCT Int. Appl., 198 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 2001006016	A2	20010125	WO 2000-US19889		20000720
WO 2001006016	C2	20020711			
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW					
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG					
CA 2379693	AA	20010125	CA 2000-2379693		20000720
EP 1194593	A2	20020410	EP 2000-950511		20000720
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO					
JP 2003530822	T2	20031021	JP 2001-511224		20000720
PRIORITY APPLN. INFO.:			US 1999-144698P	P	19990720
			WO 2000-US19889	W	20000720

AB The invention relates to compns. and methods useful in the detection of nucleic acids using a variety of amplification techniques, including both signal amplification and target amplification. Detection proceeds through the use of an electron transfer moiety (ETM) that is associated with the nucleic acid, either directly or indirectly, to allow electronic detection of the ETM using an electrode. The methods comprise hybridizing at least a first primer nucleic acid to the target sequence to form a first hybridization complex, and contacting this complex with a first enzyme to form a modified primer, and then the complex is dissociated These steps may be repeated a plurality of times. A first assay complex is then formed comprising at least one ETM and the modified first primer nucleic acid. The assay complex is covalently attached to an electrode. Electrode transfer is then detected between the ETM and the electrode as an indication of the presence of the target sequence. The method can include the same method on a second target sequence substantially complementary to the first target sequence. The ETM moieties may be attached to the base, a ribose, a phosphate, or to analogous structures in a nucleic acid analog; syntheses are provided for a number of ferrocene derivs. with nucleotide monomers.

L3 ANSWER 11 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:310509 CAPLUS
DOCUMENT NUMBER: 134:336656
TITLE: Determination of nucleic acids using hybridization probes comprising peptide-nucleic acids containing electron transfer moiety labels
INVENTOR(S): Batz, Hans-georg; Hansen, Henrik Frydenlund; Orum, Henrik; Koch, Troels; Schuster, Gary B.; Armitage, Bruce A.; Ly, Danith
PATENT ASSIGNEE(S): Roche Diagnostics Gmbh, Germany; Georgia Tech Research Corporation
SOURCE: U.S., 41 pp., Cont.-in-part of U.S. Ser. No. 805,411. CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6225052	B1	20010501	US 1997-975894	19971121
US 6117973	A	20000912	US 1997-805411	19970224
WO 9837232	A2	19980827	WO 1998-EP1026	19980223
WO 9837232	A3	19981022		
W: AU, CA, JP, KR, NO				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9868225	A1	19980909	AU 1998-68225	19980223
ZA 9801466	A	19990823	ZA 1998-1466	19980223
EP 968309	A2	20000105	EP 1998-913578	19980223
EP 968309	B1	20041013		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
AT 279534	E	20041015	AT 1998-913578	19980223

PRIORITY APPLN. INFO.:
US 1997-805411 A2 19970224
US 1997-975894 A 19971121
WO 1998-EP1026 W 19980223

OTHER SOURCE(S): MARPAT 134:336656
AB New electron transfer moiety labeled nucleic acid analog probes are provided that can be used in methods for determining nucleic acids in a sample. The new probes can be prepared using novel monomer subunits in a chemical synthesis route. The nucleic acids can be determined by binding the probe mols. to the nucleic acid and inducing electron transfer within the complex formed. The

occurrence of the electron transfer is determined as a measure of the nucleic acid. Hairpin-forming peptide nucleic acids containing anthraquinone-2-carboxylic acid and 9-aminoacridine or anthraquinone-2-carboxylic acid and 4-amino-1,8-naphthalimide were prepared Their interaction with DNA and changes in fluorescence as a result of DNA binding were studied. Peptide nucleic acids containing anthraquinone-2-carboxylic acid were also demonstrated to bind DNA and cause cleavage of the DNA by photoinduced electron transfer.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 12 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:139749 CAPLUS

DOCUMENT NUMBER: 134:304683

TITLE: Rational Design of Fluorescein-Based Fluorescence Probes. Mechanism-Based Design of a Maximum Fluorescence Probe for Singlet Oxygen

AUTHOR(S): Tanaka, Kumi; Miura, Tetsuo; Umezawa, Naoki; Urano, Yasuteru; Kikuchi, Kazuya; Higuchi, Tsunehiko; Nagano, Tetsuo

CORPORATE SOURCE: Graduate School of Pharmaceutical Sciences, The University of Tokyo, Bunkyo-ku Tokyo, 113-0033, Japan

SOURCE: Journal of the American Chemical Society (2001), 123(11), 2530-2536
CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Fluorescein is one of the best available fluorophores for biol. applications, but the factors that control its fluorescence properties are not fully established. Thus, the authors initiated a study aimed at providing a strategy for rational design of functional fluorescence probes bearing fluorescein structure. The authors synthesized various kinds of fluorescein derivs. and examined the relation between their fluorescence properties and the HOMO levels of their benzoic acid moieties obtained by semiempirical PM3 calcns. The fluorescence properties of fluorescein derivs. are controlled by a photoinduced electron transfer (PET) process from the benzoic acid moiety to the xanthene ring and the threshold of fluorescence OFF/ON switching lies around -8.9 eV for the HOMO level of the benzoic acid moiety. This information provides the basis for a practical strategy for rational design of functional fluorescence probes to detect certain biomols. The authors used this approach to design and synthesize 9-[2-(3-carboxy-9,10-dimethyl)anthryl]-6-hydroxy-3H-xanthen-3-one (DMAX) as a singlet oxygen probe and confirmed that it is the most sensitive probe currently known for 1O2. This novel fluorescence probe has a 9,10- dimethylanthracene moiety as an extremely fast chemical trap of 1O2. As was expected from PM3 calcns., DMAX scarcely fluoresces, while DMAX endoperoxide (DMAX-EP) is strongly fluorescent. Further, DMAX reacts with 1O2 more rapidly, and its sensitivity is 53-fold higher than that of 9-[2-(3-carboxy-9,10-diphenyl)anthryl]-6-hydroxy-3H-xanthen-3-ones (DPAXs), which are fluorescence probes for singlet oxygen that the authors recently developed. DMAX should be useful as a fluorescence probe for detecting 1O2 in a variety of biol. systems.

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 13 OF 23 COMPENDEX COPYRIGHT 2006 EEI on STN

ACCESSION NUMBER: 2001(38):640 COMPENDEX

TITLE: Kinetics of long-range electron transfer through alkanethiolate monolayers containing amide bonds.

AUTHOR: Sek, S. (Department of Chemistry University of Warsaw, 02-093 Warsaw, Poland); Bilewicz, R.

SOURCE: Journal of Electroanalytical Chemistry v 509 n 1 Aug 10 2001 2001.p 11-18
CODEN: JECHES ISSN: 0022-0728
PUBLICATION YEAR: 2001
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
LANGUAGE: English
AN 2001(38):640 COMPENDEX
AB Non-electroactive alkanethiolate monolayers containing internal amide bonds were used as model systems for the studies of the effect of structure of the intervening medium on long-range electron transfer. The blocking properties and the kinetics of electron transfer across the monolayers immobilized on gold were studied by voltammetry with the hexachloroiridate(IV) ion as the redox probe in the solution. The electron transfer efficiency was measured over a large potential window. The three types of monolayers studied were simple octadecanethiol and two amide-containing systems with one or two amide moieties in place of selected methylene groups in the main alkyl chain. Enhanced electronic coupling between the redox probe and the metal of the electrode was found for the monolayers with internal amide bonds. We ascribed it to the contribution of a hydrogen bonded network to electron tunneling through the monolayer. In the case of monolayers formed by molecules containing two secondary amide groups, the location of amide moieties inside the monolayer was shown to play an important role in the electron transfer efficiency. The second amide moiety placed in the alkyl chain in the odd position relative to the first amide did not increase electronic coupling in the monolayer. This behavior can be explained as due to larger distances between the amide groups in the external plane of the monolayer leading to difficulty in the formation of the hydrogen bond network. The position of the amide group relative to the electrode surface may be also considered as an important factor determining the efficiency of electron tunneling through the monolayer. 52 Refs.

L3 ANSWER 14 OF 23 CAPLUS
ACCESSION NUMBER: 2000:456965 CAPLUS
DOCUMENT NUMBER: 133:71080
TITLE: Tissue collection devices containing biosensors
INVENTOR(S): Kayyem, Jon Faiz
PATENT ASSIGNEE(S): Clinical Micro Sensors, Inc., USA
SOURCE: PCT Int. Appl., 103 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000038836	A1	20000706	WO 1999-US31051	19991227
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2355875	AA	20000706	CA 1999-2355875	19991227
AU 2000031282	A5	20000731	AU 2000-31282	19991227
EP 1140360	A1	20011010	EP 1999-965340	19991227
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, SI, LT, LV, FI, RO

JP 2002533694	T2	20021008	JP 2000-590780	19991227
US 6833267	B1	20041221	US 1999-472657	19991227
US 2004146899	A1	20040729	US 2003-697908	20031029
PRIORITY APPLN. INFO.:			US 1998-114178P	P 19981230
			US 1999-472657	A3 19991227
			WO 1999-US31051	W 19991227

AB The present invention provides tissue collection devices, particularly blood collection devices, comprising an electrode. The electrodes may further comprise self-assembled monolayers and capture binding ligands, particularly nucleic acid capture probes. The monolayers may comprise insulators and/or electroconduit-forming species (EFS). The devices may further comprise at least one reagent, including anticoagulants, probe nucleic acids, and lysis reagents. In a further aspect, the invention provides methods of detecting a target analyte in a sample comprising applying an initiation signal to a tissue collection device comprising an electrode. The electrode may comprise a self-assembled monolayer and an assay complex comprising a capture binding ligand, the target analyte and an electron transfer moiety. The methods further comprise detecting electron transfer between the electrode and the electron transfer moiety. The methods may further comprise collecting the sample, e.g., using blood collection equipment.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 15 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:291304 CAPLUS
DOCUMENT NUMBER: 132:305456
TITLE: Electrode based biosensors in conjunction with nucleic acid probes, colloid particles and electron transfer moieties
INVENTOR(S): Bamdad, Cynthia; Mucic, Robert
PATENT ASSIGNEE(S): Clinical Micro Sensors, Inc., USA
SOURCE: PCT Int. Appl., 99 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000024941	A1	20000504	WO 1999-US25464	19991027
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6541617	B1	20030401	US 1999-428155	19991027
PRIORITY APPLN. INFO.:			US 1998-105875P	P 19981027

AB The invention concerns an electrode-type biosensor in conjunction with particles that comprise a self-assembled monolayer, a capture probe, an amplification sequence, a label probe hybridized to the amplification sequence; the label probe comprises at least one covalently attached electron transfer moiety (ETM), e.g. a metallocene. Upon binding of a target analyte, a particle and a reporter composition are associated and transported to an electrode surface. The ETMs are then detected

, allowing the presence or absence of the target analyte to be determined
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 16 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3
ACCESSION NUMBER: 2000:437028 CAPLUS
DOCUMENT NUMBER: 133:222243
TITLE: Microscopic detection of light-induced electron transfer in molecular assembly system using scanning Maxwell stress microscopy (SMM)
AUTHOR(S): Hirata, Y.; Mizutani, F.; Yokoyama, H.
CORPORATE SOURCE: National Institute of Bioscience and Human-Technology (NIBH), Tsukuba, Ibaraki, 305-8566, Japan
SOURCE: Electrochimica Acta (2000), 45(18), 2953-2959
CODEN: ELCAAV; ISSN: 0013-4686
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Scanning Maxwell stress microscopy (SMM), a type of scanning probe microscope capable of imaging the distribution of surface potential over the sample surface, was used to study the light induced electron transfer from cyanine dye to viologen moieties embedded in hetero-type Langmuir-Blodgett films. The authors could observe the light induced surface potential changes upon laser light illumination. Further, the direction of the changes was in accordance with that of the light induced electron transfer in hetero-type LB films.
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 17 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:723217 CAPLUS
DOCUMENT NUMBER: 131:347448
TITLE: Electronic detection of nucleic acids using metallocene-modified capture probes on self-assembled monolayers
INVENTOR(S): Bamdad, Cynthia; Yu, Changyun
PATENT ASSIGNEE(S): Clinical Micro Sensors, USA
SOURCE: PCT Int. Appl., 164 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9957319	A1	19991111	WO 1999-US1703	19990127
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2327525	AA	19991111	CA 1999-2327525	19990127
AU 9924735	A1	19991123	AU 1999-24735	19990127
AU 765597	B2	20030925		
EP 1075541	A1	20010214	EP 1999-904314	19990127
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002513592	T2	20020514	JP 2000-547270	19990127
US 2003087228	A1	20030508	US 1999-245105	19990127
AU 2003271352	A1	20040205	AU 2003-271352	20031224

PRIORITY APPLN. INFO.:

US 1998-84425P	P	19980506
US 1998-84509P	P	19980506
US 1998-135183	A	19980817
AU 1999-24735	A	19990127
WO 1999-US1703	W	19990127

AB The present invention is directed to the electronic detection of nucleic acids using self-assembled monolayers. Electrodes are provided comprising a monolayer comprising conductive oligomers and a capture probe; the compns. further comprise a label probe comprising a first portion that is capable of hybridizing to a component of an assay complex, and a second portion comprising a recruitment linker that does not hybridize to a component of an assay complex and comprises at lease one covalently attached electron transfer moiety such as a metallocene or more specifically ferrocene. The target sequence is attached to the electrode by direct or indirect hybridization to the capture probe and detecting electron transfer between said electron transfer moiety and the electrode. Amplifier probes and/or capture extender probes may also be used. Syntheses of deoxyribonucleotide triphosphates with covalently labeled electron transfer moieties such as ferrocene are also described.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 18 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:723215 CAPLUS

DOCUMENT NUMBER: 131:348747

TITLE: Electronic methods for the detection of analytes utilizing self-assembled monolayers having conductive oligomers and capture binding ligands

INVENTOR(S): Bamdad, Cynthia; Yu, Changjun

PATENT ASSIGNEE(S): Clinical Micro Sensors, Inc., USA

SOURCE: PCT Int. Appl., 143 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 6

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9957317	A1	19991111	WO 1999-US10104	19990506
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2331189	AA	19991111	CA 1999-2331189	19990506
AU 9940725	A1	19991123	AU 1999-40725	19990506
AU 763494	B2	20030724		
EP 1075549	A1	20010214	EP 1999-924156	19990506
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002513916	T2	20020514	JP 2000-547268	19990506
US 6600026	B1	20030729	US 1999-306653	19990506

PRIORITY APPLN. INFO.:

US 1998-84509P	P	19980506
US 1998-84652P	P	19980506
US 1998-135183	A	19980817
WO 1999-US10104	W	19990506

AB The present invention relates to the use of self-assembled monolayers with

mixts. of conductive oligomers and insulators to detect target analytes. The following were prepared: adenosine modified with ferrocene at the 2' position, a branched adenosine, adenosine with ferrocene attached via a phosphate, ethylene glycol-terminated wire, uridine attached to an insulator, and an electrode containing capture nucleic acids containing conductive oligomers and insulators. Electrodes having linker-attached capture oligonucleotide probes, conductive oligomers and insulators were tested.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 19 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:487433 CAPLUS
DOCUMENT NUMBER: 131:140458
TITLE: Electronic detection of nucleic acid amplification
INVENTOR(S): Kayyem, Jon Faiz
PATENT ASSIGNEE(S): Clinical Micro Sensors, Inc., USA
SOURCE: PCT Int. Appl., 193 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 6
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9937819	A2	19990729	WO 1999-US1705	19990127
WO 9937819	A3	19991014		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6063573	A	20000516	US 1998-14304	19980127
CA 2319170	AA	19990729	CA 1999-2319170	19990127
AU 9924737	A1	19990809	AU 1999-24737	19990127
AU 764926	B2	20030904		
EP 1051517	A2	20001115	EP 1999-904316	19990127
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002500897	T2	20020115	JP 2000-528725	19990127
US 2003087228	A1	20030508	US 1999-245105	19990127

PRIORITY APPLN. INFO.:

US 1998-14304	A	19980127
US 1998-73011P	P	19980129
US 1998-78102P	P	19980316
US 1998-84425P	P	19980506
US 1998-84509P	P	19980506
US 1998-135183	A	19980817
WO 1999-US1705	W	19990127

AB The invention relates to compns. and methods useful in the detection of nucleic acids using a variety of amplification techniques, including both signal amplification and target amplification. Detection proceeds through the use of an electron transfer moiety (ETM) that is associated with the nucleic acid, either directly or indirectly, to allow electronic detection of the ETM using an electrode. The ferrocene-containing adenosine compds. were synthesized, incorporated into oligonucleotides, and used in detection of target DNA, e.g., HIV-derived DNA, and detection of 16S rRNA.

L3 ANSWER 20 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:468659 CAPLUS
DOCUMENT NUMBER: 131:98478
TITLE: Semiconductor detector device for detecting DNA hybridization and its use in detection of genetic information
INVENTOR(S): Schichman, Steven A.; Parkinson, Bruce
PATENT ASSIGNEE(S): USA
SOURCE: PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9936573	A1	19990722	WO 1999-US1017	19990119
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9925595	A1	19990802	AU 1999-25595	19990119
PRIORITY APPLN. INFO.:			US 1998-9107 A	19980120
			WO 1999-US1017 W	19990119

AB A semiconductor detector device for detecting DNA hybridization is described. The device provides a detection system comprising a semiconductor substrate which forms a platform on which hybridization may be performed, and the site of attachment of specific single-stranded DNA mols. attached thereto. The device detects electrons which are conducted from chemical labels through double-stranded DNA formed between complementary single-stranded probe nucleotides and target polynucleotides. Electron-acceptor and electron-donor embodiments are described. Also described are electron-transfer chemical labels that are attached to single-stranded DNA mols.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 21 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1998:605034 CAPLUS
DOCUMENT NUMBER: 129:212488
TITLE: Nucleic acid analog probes containing electron donors and/or electron acceptors and their use in determining nucleic acids
INVENTOR(S): Batz, Hans-georg; Hansen, Henrik Frydenlund; Orum, Henrik; Koch, Troels; Shuster, Gary B.; Armitage, Bruce A.; Ly, Danith
PATENT ASSIGNEE(S): Georgia Tech Research Corp., USA; Boehringer Mannheim G.m.b.H.
SOURCE: PCT Int. Appl., 92 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9837232	A2	19980827	WO 1998-EP1026	19980223

WO 9837232		A3	19981022			
W: AU, CA, JP, KR, NO						
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE						
US 6117973		A	20000912	US 1997-805411		19970224
US 6225052		B1	20010501	US 1997-975894		19971121
AU 9868225		A1	19980909	AU 1998-68225		19980223
EP 968309		A2	20000105	EP 1998-913578		19980223
EP 968309		B1	20041013			
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI						
AT 279534		E	20041015	AT 1998-913578		19980223
PRIORITY APPLN. INFO.:				US 1997-805411	A	19970224
				US 1997-975894	A	19971121
				WO 1998-EP1026	W	19980223

AB New electron transfer moiety labeled nucleic acid analog probes are provided that can be used in methods for determining nucleic acids in a sample. The new probes can be prepared using novel monomer subunits in a chemical synthesis route. The nucleic acids can be determined by binding the probe mols. to the nucleic acid and inducing electron transfer within the complex formed. The occurrence of the electron transfer is determined as a measure of the nucleic acid. Hairpin-forming peptide nucleic acids containing anthraquinone-2-carboxylic acid and 9-aminoacridine or anthraquinone-2-carboxylic acid and 4-amino-1,8-naphthalimide were prepared Their interaction with DNA and changes in fluorescence as a result of DNA binding were studied. Peptide nucleic acids containing anthraquinone-2-carboxylic acid were also demonstrated to bind DNA and cause cleavage of the DNA by photoinduced electron transfer.

L3 ANSWER 22 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	1996:368358 CAPLUS
DOCUMENT NUMBER:	125:153176
TITLE:	Kinetic separation of amperometric sensor responses
AUTHOR(S):	Forster, Robert J.
CORPORATE SOURCE:	Sch. Chem. Sci., Dublin City Univ., Dublin, Ire.
SOURCE:	Analyst (Cambridge, United Kingdom) (1996), 121(6), 733-741
	CODEN: ANALAO; ISSN: 0003-2654
PUBLISHER:	Royal Society of Chemistry
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB The electrochem. behaviors of adriamycin and quinizarin monolayers, which are adsorbed on Hg microelectrodes and are in contact with aqueous electrolyte solns., were studied by cyclic voltammetry and high-speed chronoamperometry. When the solution pH is <6, reduction of the quinone moieties is a rapid, electrochem. reversible, process that is consistent with a nearly ideal 2-electron, 2-proton redox reaction involving a surface-confined redox couple. The potential dependence of the redox composition follows the Nernst equation with the expected theor. slope. The adsorption thermodn. follow the Langmuir isotherm over the concentration range 2 + 10-8 to 2 + 10-5 mol/L. Limiting surface coverages, Γs of (1.1 ± 0.1) + 10-10 and (1.3 ± 0.1) + 1010 mol/cm2 and energy parameters, β, of (4.5 ± 0.3) + 105 and (6.1 ± 0.5) + 105 L/mol were observed for adriamycin and quinizarin monolayers, resp. Microsecond time-scale chronoamperometry was used to probe both the rate of heterogeneous electron transfer to the adsorbed anthraquinone moieties and their surface coverages. Standard heterogeneous electron transfer rate consts., k0, as measured at a solution pH of 3.5, are (3.1 ± 0.2) + 104 and (1.0 ± 0.1) + 103 s-1 for adriamycin and quinizarin, resp. The formal potentials of adriamycin and quinizarin are almost identical. Therefore, binary monolayers, formed by simultaneous

adsorption of both anthraquinones exhibit only a single voltammetric peak. Under these circumstances, traditional electroanal. techniques cannot be used to determine the surface coverages of the individual species. However, in potential step expts., three single exponential current decays are separated on a microsecond time-scale. These decays correspond to double-layer charging and heterogeneous electron transfer to the adriamycin and quinizarin redox centers, resp. This kinetic separation of the faradaic responses allows the surface coverages of the individual components within the monolayer to be determined Despite their identical formal potentials, the concns. of the 2 anthraquinones in solution were determined by combining information about heterogeneous kinetics and adsorption thermodn.

L3 ANSWER 23 OF 23 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:591971 CAPLUS
DOCUMENT NUMBER: 122:324753
TITLE: Electron Transfer Dynamics and Surface Coverages of Binary Anthraquinone Monolayers on Mercury Microelectrodes
AUTHOR(S): Forster, Robert J.
CORPORATE SOURCE: School of Chemical Sciences, Dublin City University, Dublin, Ire.
SOURCE: Langmuir (1995), 11(6), 2247-55
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Single component monolayers of anthraquinone-2,6-disulfonic acid (2,6-AQDS) or anthraquinone-1,5-disulfonic acid (1,5-AQDS) were formed by equilibrium adsorption from aqueous 1.0M HClO4 onto mercury microelectrodes. The adsorption thermodn. follow the Langmuir isotherm over the concentration range from 2 + 10-8M to 8 + 10-7M. The same limiting surface coverage, Γs (1.0 ± 0.08 + 10-10 mol cm-2), and energy parameter, β (5.5 ± 0.7 + 106 M-1), are observed for both anthraquinones. The cyclic voltammetry of these single component monolayers is nearly ideal, and the potential dependence of the redox composition follows the Nernst equation with the expected theor. slope. Microsecond time scale chronoamperometry was used to probe both the rate of heterogeneous electron transfer to the adsorbed anthraquinone moieties and their surface coverages. Binary monolayers were formed by simultaneously adsorption of both anthraquinones. A plot of the differential capacitance vs. the applied potential exhibits a capacitance min. at the potential of zero charge, -0.300 V. The film capacitance is 40 ± 5 μF cm-2. The surface pKa of the sulfonic acid groups was estimated as 2.9 ± 0.5 by measuring the interfacial capacitance as the solution pH is systematically varied. The formal potentials of 2,6-AQDS and 1,5-AQDS are almost identical. Therefore, binary monolayers containing both species exhibit only a single voltammetric peak. Under these circumstances, traditional electroanal. techniques cannot be used to determine the surface coverages of the individual species. However, in short time scale potential step expts., three single exponential current decays are separated on a microsecond time scale. These decays correspond to double layer charging and heterogeneous electron transfer to the 2,6-AQDS and 1,5-AQDS redox centers, resp. This kinetic separation of the faradaic responses allows the surface coverages of the individual components within the monolayer to be determined Despite their identical formal potentials, the concns. of the two anthraquinones in solution were determined by combining information about heterogeneous kinetics and adsorption thermodn.

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NEWS 8	SEP 25	CA(SM)/CAplus(SM) display of CA Lexicon enhanced
NEWS 9	SEP 25	CAS REGISTRY(SM) no longer includes Concord 3D coordinates
NEWS 10	SEP 25	CAS REGISTRY(SM) updated with amino acid codes for pyrrolysine
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NEWS 12	OCT 19	LOGOFF HOLD duration extended to 120 minutes
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NEWS 15	OCT 23	CAS Registry Number crossover limit increased to 300,000 in multiple databases
NEWS 16	OCT 23	The Derwent World Patents Index suite of databases on STN has been enhanced and reloaded
NEWS 17	OCT 30	CHEMLIST enhanced with new search and display field
NEWS 18	NOV 03	JAPIO enhanced with IPC 8 features and functionality
NEWS 19	NOV 10	CA/CAplus F-Term thesaurus enhanced
NEWS 20	NOV 10	STN Express with Discover! free maintenance release Version 8.01c now available
NEWS 21	NOV 13	CA/CAplus pre-1967 chemical substance index entries enhanced with preparation role
NEWS 22	NOV 20	CAS Registry Number crossover limit increased to 300,000 in additional databases
NEWS 23	NOV 20	CA/CAplus to MARPAT accession number crossover limit increased to 50,000
NEWS 24	NOV 20	CA/CAplus patent kind codes will be updated
NEWS 25	DEC 01	CAS REGISTRY updated with new ambiguity codes

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NEWS X25	X.25 communication option no longer available

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FIELD CODE - 'AND' OPERATOR ASSUMED 'LABEL?) (P) '
L1     1293345 (PROB? OR TAG? OR LABEL?) (P) (MEASUR? OR SENS? OR DETECT? OR
               MONITOR?)

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=> s l1 and (?chip or wafer or substrate or microfluid?)
L2       65485 L1 AND (?CHIP OR WAFER OR SUBSTRATE OR MICROFLUID?)

=> s l1 and (?chip or wafer or substrate or microfluid?) (p) (electrode or pad or
lead or contact)
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PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'ROFLUID?) (P) '
L3        9705 L1 AND (?CHIP OR WAFER OR SUBSTRATE OR MICROFLUID?) (P) (ELECTRO
               DE OR PAD OR LEAD OR CONTACT)

=> s l1 and (?chip or wafer or substrate or microfluid?) (p) (?electrode or pad or
lead or contact)
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'ROFLUID?) (P) '
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'ROFLUID?) (P) '
L4        9119 L1 AND (?CHIP OR WAFER OR SUBSTRATE OR MICROFLUID?) (P) (?ELECTR
               ODE OR PAD OR LEAD OR CONTACT)

=> s l3 and current (s) (measur? or sens? or detect? or monitor?)
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   2 FILES SEARCHED...
L5        1269 L3 AND CURRENT (S) (MEASUR? OR SENS? OR DETECT? OR MONITOR?)

=> s l5 and nucleic (8w) acid
   1 FILES SEARCHED...
L6          34 L5 AND NUCLEIC (8W) ACID

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(8w) acid) or ?nucleotide)
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L7          65 L5 AND (IMMOBILI? OR ATTACH? OR BOUND) (S) (DNA OR RNA OR ANTIB
               OD? OR (NUCLEIC (8W) ACID) OR ?NUCLEOTIDE)

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L8   ANSWER 1 OF 52  CAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2006:10862  CAPLUS
DOCUMENT NUMBER:          144:66350
TITLE:                    DNA detection apparatus, and DNA detection electrode
INVENTOR(S):              Katayama, Hideo
PATENT ASSIGNEE(S):       Daikin Industries, Ltd., Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 17 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------    --------
     JP 2006003222         A2    20060105    JP 2004-179965          20040617
PRIORITY APPLN. INFO.:                       JP 2004-179965          20040617
AB   A DNA detection apparatus/electrode is provided, which is
     capable of more simply and conveniently detecting DNA with
     higher sensitivity.  The DNA detection apparatus
     is equipped with an electrode part possessing an
     electrode with which a capture probe is bound
     to the surface of a carbon electrode via a mediator.  The apparatus
     is designed to detect DNA by a process for controlling the temperature
     cycle for performing a polymerase chain reaction with a DNA sample liquid, a
     process for soaking the electrode part into the DNA sample liquid,
     allowing the amplified target DNA to bind with the capture probe
     on the electrode, and further, controlling the temperature so as to
     allow a reporter probe labeled with an enzyme to bind
     with the target DNA, and a process for measuring the elec.
     current value of a critical oxidation current flowing with the
     electrode in an evaluation liquid based on the reaction of the
     enzyme labeling the reporter probe with a
     substrate.  Diagrams describing the apparatus assembly are given.

L8   ANSWER 2 OF 52  CAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2006:1006014  CAPLUS
DOCUMENT NUMBER:          145:308113
TITLE:                    Method, apparatus and computer program for nucleic
                          acid sequence analysis
INVENTOR(S):              Hongo, Sadato; Yanaga, Shinji
PATENT ASSIGNEE(S):       Kabushiki Kaisha Toshiba, Japan
```

SOURCE: Eur. Pat. Appl., 65pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1705481	A2	20060927	EP 2006-251443	20060317
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
JP 2006258702	A2	20060928	JP 2005-78977	20050318
US 2006252067	A1	20061109	US 2006-377265	20060317

PRIORITY APPLN. INFO.: JP 2005-78977 A 20050318

AB The present invention provides a method, apparatus and computer program for nucleic acid sequence anal. The method comprises injecting a solution containing a sample DNA into a chip cartridge provided with a detecting electrode, to which a probe DNA is immobilized, introducing an intercalator solution in the chip cartridge, and obtaining a current-voltage characteristic curve by measuring a current in the solution due to an electrochem. reaction of the intercalator through the detecting electrode. A baseline is then obtained by linearly approximating the current-voltage characteristic curve, a net current value is obtained by subtracting from a peak current value of the current-voltage characteristic curve, a baseline current value obtained from the baseline at a peak voltage value defining the peak current value and the nucleotide sequence in the sample DNA is identidied using the net current value. The method and apparatus may be used in genotyping single nucleotide polymorphisms.

L8 ANSWER 3 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:1242950 CAPLUS
TITLE: A medical apparatus for electrochemical screening and early diagnosis of malignant tumor
INVENTOR(S): Ju, Huangxian
PATENT ASSIGNEE(S): Nanjing University, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 9pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1866018	A	20061122	CN 2006-10040051	20060430

PRIORITY APPLN. INFO.: CN 2006-10040051 20060430

AB The invention provides a medical apparatus for electrochem. screening and early diagnosis of malignant tumor. The medical apparatus consists of an eight-channel immunoassay chip which connects to a time-resolved multi-channel potentiostat via an interface, and a data processing and displaying system connecting to the above potentiostat through interface. The immunoassay chip comprises eight working electrodes coated with functionalized membrane immobilized with different tumor-associated antigens, Ag wire, Ag/AgCl reference electrode, carbon counter electrode, and insulating membrane. The working principle of the inventive medical apparatus comprises the antigen mols. immobilized on the electrode surface and the antigen

mols. contained in the sample to be detected competitively bind to the enzyme-labeled antibodies in incubation solution, and as a result, part of the enzyme-labeled antibodies bind to the electrode surface so as to form catalytic current, thus the contents of the eight antigens in sample can be obtained, and the detection results can be processed by a software and displayed in the form of direct and readable images. The inventive medical apparatus has the advantages of low cost, intellectualized detection, rapidness, and good application prospect.

L8 ANSWER 4 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:622239 CAPLUS
DOCUMENT NUMBER: 145:265878
TITLE: Investigation of the interaction between Tc85-11 protein and antibody anti-T. cruzi by AFM and amperometric measurements
AUTHOR(S): Ferreira, A. A. P.; Colli, W.; Alves, M. J. M.; Oliveira, D. R.; Costa, P. I.; Gueell, A. G.; Sanz, F.; Benedetti, A. V.; Yamanaka, H.
CORPORATE SOURCE: Institute of Chemistry, UNESP, Araraquara, SP, 14801-970, Brazil
SOURCE: Electrochimica Acta (2006), 51(24), 5046-5052
CODEN: ELCAAV; ISSN: 0013-4686
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This present work reports on development of an amperometric immunosensor for the diagnosis of Chagas' disease using a specific glycoprotein of the trypomastigote surface, which belongs to the Tc85-11 protein family of Trypanosoma cruzi (T. cruzi). An atomically flat gold surface on a silicon substrate and gold screen-printed electrodes were functionalized with cystamine and later activated with glutaraldehyde (GA), which was used to form covalent bonds with the purified recombinant antigen (Tc85-11). The antigen reacts with the antibody from the serum, and the affinity reaction was monitored directly using atomic force microscopy or amperometry through a secondary antibody tagged to peroxidase (HRP). Surface imaging allowed to us to differentiate the modification steps and antigen-antibody interaction allowed to distinguish the affinity reactions. In the amperometric immunosensor, peroxidase catalyzes the L2 formation in the presence of hydrogen peroxide and potassium iodide, and the reduction current intensity was measured at a given potential with screen-printed electrodes. The immunosensor was applied to sera of chagasic patients and patients having different systemic diseases.
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 5 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2005:1338769 CAPLUS
DOCUMENT NUMBER: 144:228553
TITLE: Electrochemical immunoassay for CA125 based on cellulose acetate stabilized antigen/colloidal gold nanoparticles membrane
AUTHOR(S): Wu, Lina; Chen, Jin; Du, Dan; Ju, Huangxian
CORPORATE SOURCE: Key Laboratory of Analytical Chemistry for Life Science (Education Ministry of China), Department of Chemistry, Nanjing University, Nanjing, 210093, Peop. Rep. China
SOURCE: Electrochimica Acta (2006), 51(7), 1208-1214
CODEN: ELCAAV; ISSN: 0013-4686
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal

LANGUAGE: English

AB A novel separation-free electrochem. immunosensor for carcinoma antigen-125 (CA125) was proposed based on the immobilization of CA125 antigen on colloidal gold nanoparticles that was stabilized with cellulose acetate membrane on a glassy carbon electrode. A competitive immunoassay format was employed to detect CA125 antigen with horseradish peroxidase (HRP) labeled CA125 antibody as tracer, o-phenylenediamine and hydrogen peroxide as enzyme substrates. After the immunosensor was incubated with a mixture of HRP labeled CA125 antibody and CA125 sample at 35° for 50 min, the amperometric response decreased with an increasing CA125 concentration in the sample solution

The decreased percentage of the electrocatalytic current was proportional to CA125 concentration ranging from 0 to 30 U ml-1 with a detection limit of 1.73 U ml-1 (S/N = 3). The proposed immunosensor showed good stability, acceptable accuracy, and would be applicable to clin. immunoassay of CA125.

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 6 OF 52 COMPENDEX COPYRIGHT 2006 EEI on STN

ACCESSION NUMBER: 2006(21):2196 COMPENDEX

TITLE: Enzyme electrochemistry - Biocatalysis on an electrode.

AUTHOR: Bernhardt, Paul V. (Centre for Metals in Biology Department of Chemistry University of Queensland, Brisbane, QLD 4072, Australia)

SOURCE: Australian Journal of Chemistry v 59 n 4 2006.p 233-256

CODEN: AJCHAS ISSN: 0004-9425

PUBLICATION YEAR: 2006

DOCUMENT TYPE: Journal

TREATMENT CODE: Theoretical

LANGUAGE: English

AN 2006(21):2196 COMPENDEX

AB Oxidoreductase enzymes catalyze single- or multi-electron reduction/oxidation reactions of small molecule inorganic or organic substrates, and they are integral to a wide variety of biological processes including respiration, energy production, biosynthesis, metabolism, and detoxification. All redox enzymes require a natural redox partner such as an electron-transfer protein (e.g. cytochrome, ferredoxin, flavoprotein) or a small molecule cosubstrate (e.g. NAD(P)H, dioxygen) to sustain catalysis, in effect to balance the substrate/product redox half-reaction. In principle, the natural electron-transfer partner may be replaced by an electrochemical working electrode. One of the great strengths of this approach is that the rate of catalysis (equivalent to the observed electrochemical current) may be probed as a function of applied potential through linear sweep and cyclic voltammetry, and insight to the overall catalytic mechanism may be gained by a systematic electrochemical study coupled with theoretical analysis, In this review, the various approaches to enzyme electrochemistry will be discussed, including direct and indirect (mediated) experiments, and a brief coverage of the theory relevant to these techniques will be presented. The importance of immobilizing enzymes on the electrode surface will be presented and the variety of ways that this may be done will be reviewed. The importance of chemical modification of the electrode surface in ensuring an environment conducive to a stable and active enzyme capable of functioning natively will be illustrated. Fundamental research into electrochemically driven enzyme catalysis has led to some remarkable practical applications. The glucose oxidase enzyme electrode is a spectacularly successful application of enzyme electrochemistry. Biosensors based on

this technology are used worldwide by sufferers of diabetes to provide rapid and accurate analysis of blood glucose concentrations. Other applications of enzyme electrochemistry are in the sensing of macromolecular complexation events such as antigen-antibody binding and DNA hybridization. The review will include a selection of enzymes that have been successfully investigated by electrochemistry and, where appropriate, discuss their development towards practical biotechnological applications. $CPY CSIRO 2006. 355 Refs.

L8 ANSWER 7 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:744525 CAPLUS
DOCUMENT NUMBER: 145:391579
TITLE: Microfluidic device for sequential injection and flushing of solutions and its application to biosensing
AUTHOR(S): Nashida, Norihiro; Satoh, Wataru; Suzuki, Hiroaki
CORPORATE SOURCE: Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Ibaraki, 305-8573, Japan
SOURCE: Chemical Sensors (2006), 22(Suppl. A), 79-81
CODEN: KAGSEU
PUBLISHER: Denki Kagakkai Kagaku Sensa Kenkyukai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB A microfluidic system with injecting and flushing functions was developed. The system consisted of a glass substrate with driving electrodes and a polydimethylsiloxane (PDMS) substrate. Flow channels were formed with a dry-film photoresist layer. The hydrophilic flow channels facilitated the introduction of solns. from reservoirs. Injection and flushing of solns. were controlled by valves which operate based on electro-wetting. The valves consisted of gold working electrodes formed in the channel or a through-hole formed in the glass substrate. Solns. were introduced from the reservoirs into a reaction chamber at the center of the chip and flushed through the valve formed in the through-hole. To demonstrate the applicability of the device to immunoassay, α-fetoprotein (AFP) was immobilized on a platinum electrode in the chamber using a plasma-polymerized film (PPF). After incubation with goat anti-AFP antibodies labeled with glucose oxidase (GOD), electrochem. detection was conducted and a distinct current increase was observed, which depended on the amount of immobilized AFP.

L8 ANSWER 8 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2
ACCESSION NUMBER: 2006:197182 CAPLUS
DOCUMENT NUMBER: 144:407377
TITLE: A microelectronic technology based amperometric immunosensor for α-fetoprotein using mixed self-assembled monolayers and gold nanoparticles
AUTHOR(S): Xu, Yuan Yuan; Bian, Chao; Chen, Shaofeng; Xia, Shanhong
CORPORATE SOURCE: State Key Laboratory of Transducer Technology, Institute of Electronics, Chinese Academy of Sciences, Beijing, 100080, Peop. Rep. China
SOURCE: Analytica Chimica Acta (2006), 561(1-2), 48-54
CODEN: ACACAM; ISSN: 0003-2670
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A novel amperometric immunosensor for the detection of α-fetoprotein (AFP) based on the integration of microelectronic technol., mixed self-assembled monolayers (mixed SAMs), gold nanoparticles

(nanogold) and enzyme amplification has been developed. Using microelectronic technol., an immunosensor was fabricated which has an "Au, Pt, Pt" three-microelectrode system and two microwells constructed by SU-8 photoresist on silicon wafer. Using mixed SAMs and nanogold, a mixed monolayer comprising cysteamine and 1,6-hexanedithiol was formed on the working electrode surface to assemble nanogold and further to immobilize AFP antibody for detecting AFP in human serum samples. The stepwise mixed SAMs and nanogold based immobilization procedure was characterized by cyclic voltammetry. The factors influencing the performance of the resulting immunosensor were studied in detail. After the addition of H2O2 and KI to the immunosensor incubated with AFP and further with horseradish peroxidase-labeled AFP antibody, the cathodic current varied linearly in concentration range of AFP from 15 to 350 ng/mL with a detection limit of 5 ng/mL. Moreover, the studied immunosensor has attractive advantages, such as miniaturization, compatibility with the complementary metal oxide semiconductor (CMOS) techniques, high specificity, good reproducibility and long-term stability, which make it potentially attractive for clin. immunoassays.

REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 9 OF 52 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2006:9122615 INSPEC
TITLE: A CMOS integrated DNA chip for quantitative DNA analysis
AUTHOR: Gemma, N.; O'uchi, S.; Funaki, H.; Okada, J.; Hongo, S. (Toshiba, Kawasaki, Japan)
SOURCE: 2006 IEEE International Solid-State Circuits Conference. Digest of Technical Papers (IEEE Cat. No. 06CH37754), 2006, p. 10 pp. of CD-ROM pp., 4 refs.
ISBN: 1 4244 0079 1
Price: 1 4244 0079 1/2006/$20.00
Published by: IEEE, Piscataway, NJ, USA
Conference: 2006 IEEE International Solid-State Circuits Conference. Digest of Technical Papers, San Francisco, CA, USA, 5-9 Feb. 2006
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Practical
COUNTRY: United States
LANGUAGE: English
AN 2006:9122615 INSPEC
AB Quantitative gene expression analysis, based on an electrochemical DNA-detection method uses immobilized DNA probes on Au electrodes with diameters from 200μm to 2μm. Cyclic voltammetry is used to measure anodic current from the intercalators. The 25+3mm2 IC, fabricated in 1μm 2M CMOS, contains 40 electrodes, 1600 transistors and dissipates 150mW at ±3.3V

L8 ANSWER 10 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:547726 CAPLUS
DOCUMENT NUMBER: 143:93014
TITLE: Enzyme biosensors for detection of nitro-compounds utilizing modified nitroreductase immobilized on noble metal
INVENTOR(S): Kalaji, Maher; Williams, Peter Anthony; Gwenin, Christopher David
PATENT ASSIGNEE(S): University of Wales, Bangor, UK; Trwyn Limited
SOURCE: PCT Int. Appl., 63 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005056815	A1	20050623	WO 2004-GB4817	20041117
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004297386	A1	20050623	AU 2004-297386	20041117
CA 2548953	AA	20050623	CA 2004-2548953	20041117
EP 1692297	A1	20060823	EP 2004-798537	20041117
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				

PRIORITY APPLN. INFO.: GB 2003-28784 A 20031211
WO 2004-GB4817 W 20041117

AB This invention provides an amperometric biosensor comprising an electrode comprising a noble metal (i.e., gold) layer, on which layer nitroreductase is immobilized. The Cys6-modified nitroreductase encoded by modified nfnB gene from Escherichia coli is utilized in the biosensor. The E. coli nfnB gene was modified by addition of codons for the Cys6 tag. It was shown that the introduction of the Cys tags at the N-terminus does not reduce the activity in a way that detrimentally affects amperometric measurements, and that the tags were successful in the immobilization of the enzyme to a gold surface. This invention further provides a method of detecting nitro group-containing compds., the method comprising the steps of: (a) providing a sensing device of the first aspect of the invention and a reference electrode; (b) applying a potential between the electrodes; (c) measuring the current; (d) contacting the sensing device with a sample of substrate material to be tested; and (e) measuring the current change. The biosensor can be useful in detecting explosives.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 11 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:35002 CAPLUS
DOCUMENT NUMBER: 142:89344
TITLE: Biochip and method for identifying an analyte by using electrodes and gold particles with silver reinforcement
INVENTOR(S): Fritzsche, Wolfgang; Klenz, Uwe; Moeller, Robert; Kiehntopf, Michael; Koehler, Michael
PATENT ASSIGNEE(S): Institut fuer Physikalische Hochtechnologie e.V., Germany; Friedrich-Schiller-Universitaet Jena
SOURCE: PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005003772	A1	20050113	WO 2004-EP7249	20040702

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

DE 10330717	A1	20050210	DE 2003-10330717	20030703
PRIORITY APPLN. INFO.:			DE 2003-10330717 A	20030703

AB The invention relates to a device and method for identifying an analyte. The aim of the invention is to provide a device and method for identifying an analyte, which overcome the disadvantages of prior art and in particular require neither two specific bonding partners (= sandwich) for the analyte to be identified, nor the complex advance labeling of the analyte of a specific mol. class. To achieve this, the device for identifying an analyte in a measured sample consists of a support substrate, equipped with at least two electrodes that surround a gap. Said gap contains immobilized specific bonding partners that are capable of coupling a complementary corresponding analyte directly or indirectly. The width and depth of the gap are proportioned to allow the bonding of the immobilized specific bonding partners with the complementary corresponding analyte. Once bonding has occurred, the complementary corresponding analyte can be charged with elec. conductive identification substrate (e.g. colloidal gold with silver reinforcement), permitting an elec. current flow in the gap by means of a voltage that is applied to the electrodes. The electrodes are connected to a measuring unit, allowing the current flow to be permanently detectable. Examples present the cleaning of the base chips, the immobilization of DNA for thrombin measurement and the immobilization of PNA for DNA determination

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 12 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:549807 CAPLUS
DOCUMENT NUMBER: 143:74409
TITLE: Protein chip and its use in biosensor
INVENTOR(S): Kawai, Tomoji; Lee, Hye-young; Fosb, John; Kim, Jeong-Min; Park, Jeong-Won
PATENT ASSIGNEE(S): Osaka Industrial Promotion Organization, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005164388	A2	20050623	JP 2003-403408	20031202
PRIORITY APPLN. INFO.:			JP 2003-403408	20031202

AB A miniaturized and high sensitivity biosensor using a protein chip is provided, with which a specific protein is rapidly and conveniently detected without using a labeling

substance such as a fluorescent substance. The DNA protein (biomol. array chip) used for this biosensor is produced by arranging one or multiple micro-wells on an electrode surface by a micro-processing technique, forming a lipid bilayer on the electrode surface, and immobilizing a probe protein on the lipid bilayer. The target protein is detected by measuring the change in a redox elec. current value upon the interaction of the probe protein DNA with the target protein with high sensitivity. Diagrams describing the biosensor assembly and principle are given.

L8 ANSWER 13 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:546019 CAPLUS
DOCUMENT NUMBER: 143:93503
TITLE: DNA chip, and its use in biosensor
INVENTOR(S): Kawai, Tomoji; Lee, Hye-young; Park, Jeong-won; Kim, Jeong-min; Fosb, John
PATENT ASSIGNEE(S): Osaka Industrial Promotion Organization, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005164387	A2	20050623	JP 2003-403398	20031202
PRIORITY APPLN. INFO.:			JP 2003-403398	20031202

AB A miniaturized and high sensitivity biosensor using a DNA chip is provided, with which a specific DNA is rapidly and conveniently detected without using a labeling substance such as a fluorescent substance. The DNA chip (biomol. array chip) used for this biosensor is produced by arranging one or multiple micro-wells on an electrode surface by a micro-processing technique, and immobilizing a probe DNA on the resp. micro-well. A single nucleotide polymorphism (SPN) in a target DNA is detected by measuring with high sensitivity the change in a redox elec. current value upon the interaction of the probe DNA with the target DNA. Diagrams describing the biosensor assembly and principle are given.

L8 ANSWER 14 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:1255840 CAPLUS
DOCUMENT NUMBER: 143:455530
TITLE: Preparation of electrochemical quantitative polymerase chain reaction (pcr) detection chip and the detection method
INVENTOR(S): Lu, Zuhong; Ge, Qinyu; Liu, Quanjun; Bai, Yunfei
PATENT ASSIGNEE(S): Southeast University, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 9 pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1605861	A	20050413	CN 2004-10065713	20041115
PRIORITY APPLN. INFO.:			CN 2004-10065713	20041115

AB This invention relates to the preparation of electrochem. quant. PCR

detection chip and relates to an electrochem. detection technique of nucleic acid quant. PCR chip. The preparation comprises preparing electrode micro-array on the surface of the solid carrier, fixing a mol. probe for capturing nucleic acid on the electrode of the micro-array, forming a small closed cavity for containing liquid in the electrode region where the mol. probe is fixed, and connecting the electrode on the solid carrier via connection wire. The detection method comprises placing reaction components such as nucleic acid, enzyme, DNA (DNA), electrochem. active substance, etc, in the small cavity, disposing the chip into a temperature controllable big cavity, detecting the reaction-caused current-voltage change of the DNA capture mol. probe on the surface of the electrode with a potentiostat, and carrying out PCR quant. detection of multiple genes by detecting the current-voltage change during PCR cyclic process on different electrodes.

L8 ANSWER 15 OF 52 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2006(37):4490 COMPENDEX
TITLE: DNA hybridization detection at heated electrodes.
AUTHOR: Flechsig, Gerd-Uwe (Institut fur Chemie Universitat Rostock, D-18051 Rostock, Germany); Peter, Jorg; Hartwich, Gerhard; Wang, Joseph; Grundler, Peter
SOURCE: Langmuir v 21 n 17 Aug 16 2005 2005.p 7848-7853 CODEN: LANGD5 ISSN: 0743-7463
PUBLICATION YEAR: 2005
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 2006(37):4490 COMPENDEX
AB The detection of DNA hybridization is of central importance to the diagnosis and treatment of genetic diseases. Due to cost limitations, small and easy-to-handle testing devices are required. Electrochemical detection is a promising alternative to evaluation of chip data with optical readout. Independent of the actual readout principle, the hybridization process still takes a lot of time, hampering daily use of these techniques, especially in hospitals or doctor's surgery. Here we describe how direct local electrical heating of a DNA-probe-modified gold electrode affects the surface hybridization process dramatically. We obtained a 140-fold increase of alternating current voltammetric signals for 20-base ferrocene-labeled target strands when elevating the electrode temperature during hybridization from 3 to 48deg C while leaving the bulk electrolyte at 3deg C. At optimum conditions, a target concentration of 500 pmol/L could be detected. Electrothermal regeneration of the immobilized DNA-probe strands allowed repetitive use of the same probe-modified electrode. The surface coverage of DNA probes, monitored by chronocoulometry of hexaammineruthenium(III), was almost constant upon heating to 70deg C. However, the hybridization ability of the probe self-assembled monolayer declined irreversibly when using a 70deg C hybridization temperature. Coupling of heated electrodes and highly sensitive electrochemical DNA hybridization detection methods should enhance detection limits of the latter significantly. $CPY 2005 American Chemical Society. 33 Refs.

L8 ANSWER 16 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3
ACCESSION NUMBER: 2005:954599 CAPLUS
DOCUMENT NUMBER: 143:246352
TITLE: Electrical detection of protein using gold

nanoparticles and nanogap electrodes
AUTHOR(S): Tsai, Chien-Ying; Chang, Tien-Li; Uppala, Ramesh; Chen, Chun-Chi; Ko, Fu-Hsiang; Chen, Ping-Hei
CORPORATE SOURCE: Department of Mechanical Engineering, National Taiwan University, Taipei, 10617, Taiwan
SOURCE: Japanese Journal of Applied Physics, Part 1: Regular Papers, Brief Communications & Review Papers (2005), 44(7B), 5711-5716
CODEN: JAPNDE
PUBLISHER: Japan Society of Applied Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A method of elec. detecting of protein described is developed using self-assembled multilayer gold nanoparticles (AuNPs) on a SiO2/Si substrate between gold electrodes. Elec. measurements are performed at room temperature using a probe station. A monoclonal antibody is immobilized on the top surface of the first layer of AuNPs (14 nm). The second layer of AuNPs is formed through specific binding among a target antigen [hepatitis C virus, (HCV)], the monoclonal antibody, and the conjugate of a AuNP-polyclonal antibody. Once the specific binding among the monoclonal antibody, target antigen, and polyclonal antibody occurs, a significant elec. current is detected through multilayer self-assembled gold nanoparticles between nanogap electrodes. No significant current (<1 pA) can be measured through a monolayer of AuNPs. A significant difference between the IV curves of the monolayer and the multilayer of AuNPs is used to identify whether the target antigen exists in the tested sample.
REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 17 OF 52 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2005:8584942 INSPEC
DOCUMENT NUMBER: A2005-22-8770F-002; B2005-11-7510D-025
TITLE: Electrochemical single nucleotide polymorphism (SNP) detection using a microelectrode array biochip by Hoechst 33258
AUTHOR: Yong-Sung Choi; Dae-Ilce Park (Sch. of Electr., Electron. & Inf. of Eng., Wonkwang Univ., Ihksan, South Korea)
SOURCE: Journal of the Korean Physical Society (June 2005), vol.46, no.6, p. 1445-51, 19 refs.
CODEN: KPSJAS, ISSN: 0374-4884
SICI: 0374-4884(200506)46:6L.1445:ESNP;1-0
Published by: Korean Phys. Soc, South Korea
DOCUMENT TYPE: Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: Korea, Democratic Peoples Republic of
LANGUAGE: English
AN 2005:8584942 INSPEC DN A2005-22-8770F-002; B2005-11-7510D-025
AB Single nucleotide polymorphisms (SNPs) analysis requires a low cost detection technology that is capable of miniaturization, multiplexing, and high sensitivity. In this research, a DNA chip with a microelectrode array was fabricated using microfabrication technology. Several probe DNAs consisting of mercaptohexyl moiety at their 5' end were immobilized on gold electrodes by using a DNA arrayer. Then, target DNAs were hybridized and reacted with Hoechst 33258, which is a DNA minor groove binder and electrochemically active dye. Linear sweep voltammetry or cyclic voltammetry showed a difference in the anodic peak current values between target DNA, mismatched DNA, and

control DNA

L8 ANSWER 18 OF 52 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2005:8607606 INSPEC
DOCUMENT NUMBER: A2005-23-8770F-018; B2005-12-7510D-002
TITLE: Bispiral microelectrode and its application on protein biochip
AUTHOR: Guo Xi-shan; Chen Yu-quan; Pan Min; Wang Li-ren (Dept. of Biomedical Eng., Zhejiang Univ., Hangzhou, China)
SOURCE: Journal of Zhejiang University (July 2005), vol.39, no.7, p. 957-61, 9 refs.
CODEN: CHHPDK, ISSN: 1008-973X
SICI: 1008-973X(200507)39:7L.957:BMAP;1-W
Published by: Zhejiang Univ, China
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: China
LANGUAGE: English
AN 2005:8607606 INSPEC DN A2005-23-8770F-018; B2005-12-7510D-002
AB Due to finger-end effects and edge effects, the current diffusion fields of interdigital (IDT) array microelectrodes are discontinuous. So the experimental measurement results are instable and imprecise when IDT array nanoelectrodes are applied on the electronic detection of immunoreactions using protein biochip. A novel design of bispiral microelectrodes was presented. The diffusing current equation at stable state was deducted. Compared with IDT array microelectrodes, bispiral microelectrodes offer advantages of continuous electric fields, good diffusing current characteristics and limited space, which are distinct at nano scale. The performance of bispiral microelectrodes applying on electronic detection of immunoreactions was tested. Gold-nanoparticle labeled antibody was immobilized on bispiral microelectrodes using self assemble method. 3D nano networks were formed after 'sandwich' structure complex of gold nanoparticles-antibody-antigen matched bispiral microelectrodes. Micro-current on bispiral microelectrodes reflects the electrons transfer between the complex and the microelectrodes. The 'semiconductor' effect based bioamplification can increase the sensitivity of immunosensor. Experimental result shows that low concentration antigen at 10-10 g/mL level can be measured, which provides potentiality for direct electronic detection of immunoreactions using protein biochip

L8 ANSWER 19 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4
ACCESSION NUMBER: 2005:432891 CAPLUS
DOCUMENT NUMBER: 143:380390
TITLE: Magnetic field-assisted DNA hybridization and simultaneous detection using micron-sized spin-valve sensors and magnetic nanoparticles
AUTHOR(S): Graham, D. L.; Ferreira, H. A.; Feliciano, N.; Freitas, P. P.; Clarke, L. A.; Amaral, M. D.
CORPORATE SOURCE: Institute of Engineering of Systems and Computers-Microsystems and Nanotechnologies, Lisbon, 1000, Port.
SOURCE: Sensors and Actuators, B: Chemical (2005), B107(2), 936-944
CODEN: SABCEB; ISSN: 0925-4005
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Specifically designed on-chip microfabricated current -carrying metallic lines were used to generate local magnetic field

gradients to facilitate the rapid focusing and hybridization of magnetically labeled target DNA with complementary sensor-surface-bound probe DNA. Magnetoresistive biochips featuring high sensitivity spin valve sensors (2 μm + 6 μm) integrated within aluminum current lines, tapered in diameter from 150 to 5 μm at each sensor location, were surface functionalized with probe DNA and interrogated with 250 nm magnetic nanoparticles functionalized with complementary or non-complementary target DNA. Currents of 20 mA were used to rapidly concentrate and manipulate the magnetic nanoparticles at sensor sites in minutes, overcoming the diffusion limited transport of target DNA that leads to long hybridization times. On-chip target DNA concns. between .apprx.10 and 200 pM resulted in magnetoresistive hybridization signals of .apprx.1-2 mV at 8 mA sense current, equivalent to .apprx.50-100 sensor-bound nanoparticles. The noise level (.apprx.20 μV) was at the level of a signal calculated for a single nanoparticle (18.8 μV). Each nanoparticle was functionalized with <500 DNA mols. with an estimated 70 DNA-DNA interactions per nanoparticle at the sensor surface. The detection range was .apprx.140-14,000 DNA mols. per sensor equivalent to .apprx.2-200 fmol/cm2. No binding signals were observed for magnetically labeled non-complementary target DNA.

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 20 OF 52 COMPENDEX COPYRIGHT 2006 EEI on STN DUPLICATE 5

ACCESSION NUMBER: 2005(34):1158 COMPENDEX

TITLE: Amperometric DNA sensor using gold electrode modified with polymerized mediator by layer-by-layer adsorption.

AUTHOR: Suye, S. (Fiber Amenity Engineering Course Graduate School of Engineering University of Fukui, Fukui 910-8507, Japan); Matsuura, T.; Kimura, T.; Zheng, H.; Hori, T.; Amano, Y.; Katayama, H.

MEETING TITLE: The Proceedings of the 2nd International Symposium on Nano- and Giga-Challenges in Microelectronics.

MEETING DATE: 12 Sep 2004-17 Sep 2004

SOURCE: Microelectronic Engineering v 81 n 2-4 August 2005 2005.p 441-447

SOURCE: The Proceedings of the 2nd International Symposium on Nano- and Giga-Challenges in Microelectronics CODEN: MIENEF ISSN: 0167-9317

PUBLICATION YEAR: 2005

MEETING NUMBER: 65384

DOCUMENT TYPE: Conference Article

TREATMENT CODE: Theoretical

LANGUAGE: English

AN 2005(34):1158 COMPENDEX

AB An amperometric DNA sensing system is proposed based on the combination of sandwich hybridization of reporter probe, capture probe, and target DNA. InvA gene of Salmonella typhimurium was used for target DNA and glucose-6-phosphate dehydrogenase (G6PDH) was used for subsequent enzymatic electrochemical detection as reporter probe. DNA sensor was constructed as follows. At first, a gold electrode was modified with mercaptopropionic acid, then PEI-Fc (ferrocene immobilized polyethylenimine)/alginic acid, diaphorase/PEI, and PEI/ streptavidin layers were formed on the surface of electrode by layer-by-layer adsorption. Finally, capture probe was immobilized on the electrode via

streptavidin. Hybridization of target DNA and the both probe was carried at 56 deg C. Hybridization product was immobilized on the DNA sensor surface by biotin-avidin bond. Electrochemical measurement was performed in the solution containing G6P as substrate and NAD+ as cofactor for enzyme reaction. The anodic current against glucose-6-phosphate was obtained. It indicates that reporter probe was immobilized on the electrode by hybridization with target DNA and G6PDH on the probe produced NADH. The detection limit of present DNA sensor was femto mol order of target DNA. $CPY 2005 Elsevier B.V. All rights reserved. 14 Refs.

L8 ANSWER 21 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 6
ACCESSION NUMBER: 2005:581377 CAPLUS
DOCUMENT NUMBER: 143:186894
TITLE: Development of a screen-printed carbon electrochemical immunosensor for picomolar concentrations of estradiol in human serum extracts
AUTHOR(S): Pemberton, R. M.; Mottram, T. T.; Hart, J. P.
CORPORATE SOURCE: Centre for Analytical, Materials and Sensors Science, University of the West of England, Bristol, BS16 1QY, UK
SOURCE: Journal of Biochemical and Biophysical Methods (2005), 63(3), 201-212
CODEN: JBBMDG; ISSN: 0165-022X
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Investigations into the development of a prototype electrochem. immunosensor for estradiol (E2) are described. After optimizing reagent loadings in a 96-well ELISA, antibodies (rabbit anti-mouse IgG and monoclonal mouse anti-E2) were immobilized by passive adsorption onto the surface of screen-printed carbon electrodes (SPCEs). A competitive immunoassay was then performed using an alkaline-phosphatase (ALP)-labeled E2 conjugate. Calibration plots for E2 buffer stds., performed colorimetrically on the SPCEs using a para-nitrophenyl phosphate substrate solution, were in good agreement with ELISA calibration plots. Electrochem. measurements were then performed using differential pulse voltammetry (DPV) following the production of 1-naphthol from 1-naphthyl phosphate. The calibration plot of DPV peak current vs. E2 concentration showed a measurable range of 25-500 pg/mL with a detection limit of 50 pg/mL. A coefficient of variation of between 13.0 and 15.6% was obtained for repeat measurements. The immunosensor was applied to the determination of E2 in spiked serum, following an extraction step with di-Et ether. A mean recovery for the method of 102.5% was obtained with a CV of 19.1%. The options available for further development of the sensor regarding precision, limit of detection and direct sample anal. are discussed.
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 22 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:737490 CAPLUS
TITLE: Limits to surface sensitivity using electrochemical labels on DNA self-assembled monolayers
AUTHOR(S): Swami, Nathan S.
CORPORATE SOURCE: Department of Electrical Engineering, University of Virginia, Charlottesville, VA, VA 22904, USA
SOURCE: Abstracts of Papers, 230th ACS National Meeting,

Washington, DC, United States, Aug. 28-Sept. 1, 2005 (2005), COLL-014. American Chemical Society: Washington, D. C.
CODEN: 69HFCL

DOCUMENT TYPE: Conference; Meeting Abstract; (computer optical disk)
LANGUAGE: English

AB Electroanal. schemes with monolayer arrays in microfluidics systems, are well-suited to sample pre-concentration methods for high-sensitivity lab-on-chip applications. Using a two-potential electrochem. labeling method to simultaneously and independently detect the immobilization of DNA capture probe monolayers and its hybridization to complementary target mols. in real-time and in-situ, this study examines the limits to surface sensitivity for this electro-anal. method. Capture probe DNA mols. were immobilized at a saturation surface coverage of .apprx.2E13 mols./cm2, where hybridization rates are maximum Microchips with monolayers immobilized in this manner were contacted in microfluidic chambers with successively reduced concns. of target DNA (1 micromolar to 1 pM), and electrochem. anal. was performed to quant. assess the number of bound target mols. In the concentration ranges of 1 micromolar to 10 nM of target DNA in solution, saturation signals suggest that all capture probe DNA were bound to target mols. For target concns. below 10 nM, signal from bound target mols. dropped in a linear manner with concentration, since hybridization kinetics were limited by its diffusion to the surface. At the detection limit in current sensitivity of .apprx.250 fA, electrochem. signal from .apprx. 1E9-1E8 bound target mols./cm2 could be discerned (.apprx.500 mols. on a 20 um electrode).

L8 ANSWER 23 OF 52 COMPENDEX COPYRIGHT 2006 EEI on STN

ACCESSION NUMBER: 2006(11):6190 COMPENDEX
TITLE: Development of an electrochemical biosensor without a sandwich assay.
AUTHOR: Sumner, James J. (U.S. Army Research Laboratory, Adelphi, MD 20783, United States); Plaxco, Kevin W.; Meinhart, Carl D.; Soh, Hyongsok
MEETING TITLE: Smart Medical and Biomedical Sensor Technology III.
MEETING ORGANIZER: SPIE - The International Society for Optical Engineering; Center for Biophotonics Science and Technology, CBST; Lawrence Livermore National Laboratory
MEETING LOCATION: Boston, MA, United States
MEETING DATE: 24 Oct 2005-26 Oct 2005
SOURCE: Proceedings of SPIE - The International Society for Optical Engineering v 6007 2005., arn: 600706
SOURCE: Smart Medical and Biomedical Sensor Technology III
CODEN: PSISDG ISSN: 0277-786X
PUBLICATION YEAR: 2005
MEETING NUMBER: 66803
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical
LANGUAGE: English

AN 2006(11):6190 COMPENDEX

AB The combination of electrochemistry with microfluidic sample processing is a viable option to reduce the size, logistics load and power consumption of biosensors. Modern microfluidics technology makes it possible to perform sample clean-up, PCR, sample concentration and transduction on the same disposable chip. This presentation will discuss two novel electrochemical techniques which do not require a sandwich assay and can be employed on a disposable microfluidic

chip, reducing logistics load and microfluidic complexity. Transduction is achieved via an electrochemical DNA hybridization sensor similar to a molecular beacon removing the need for a sandwich assay also referred to as E-DNA. The sensor is designed where a DNA stem-loop structure is immobilized on a gold electrode with a redox label held close to the surface. Upon hybridization the stem-loop opens and the label pulls away from the surface so that current cannot flow to the electrode under positive bias. This paper will primarily discuss experiments trying to understand the hybridization event and effect of surface morphology on electrochemical signal transduction. 24 Refs.

L8 ANSWER 24 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:722737 CAPLUS
DOCUMENT NUMBER: 145:138621
TITLE: Apparatus and method for detecting nucleic acid hybridization using electrochemiluminescence
INVENTOR(S): Lee, Jeong Geon; Yoon, Gyu Sik
PATENT ASSIGNEE(S): Lg Electronics Inc., S. Korea
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2004043676	A	20040524	KR 2002-72096	20021119
PRIORITY APPLN. INFO.:			KR 2002-72096	20021119

AB An apparatus and method for detecting nucleic acid hybridization using electrochemiluminescence are provided, thereby detecting the nucleic acid hybridization without damage of the nucleic acid and the substrate of a nucleic acid chip by sending the elec. current into near the surface of the nucleic acid chip. The apparatus comprises: a nucleic acid chip containing a substrate, a probe nucleic acid fixed on the substrate, a target nucleic acid hybridized with the probe nucleic acid and an intercalator bound to the double-strand nucleic acid which is prepared by hybridization of the probe nucleic acid with target nucleic acid; transparent windows; an electrochem. device containing a working electrode having an optimal distance to the probe nucleic acid fixed nucleic acid chip; a dark box containing the nucleic acid chip, transparent windows, electrochem. device, and a transition metal complex solution; a potentiostat connected to the electrochem. device; a light measuring device for detecting electrochemiluminescence; and a charged coupled-device (CCD) camera for detecting an accurate distance between a gold plate of the nucleic acid chip and the working electrode.

L8 ANSWER 25 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:159752 CAPLUS
DOCUMENT NUMBER: 140:213492
TITLE: Base sequence analysis chip, and base sequence analysis apparatus
INVENTOR(S): Ouchi, Shinichi; Okada, Jun; Hongo, Sadato
PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004061427	A2	20040226	JP 2002-223394	20020731
JP 3828467	B2	20061004		
JP 2006234832	A2	20060907	JP 2006-115857	20060419

PRIORITY APPLN. INFO.: JP 2002-223394 A3 20020731

AB A base sequence anal. chip and a base sequence anal. apparatus are provided, with which the highly accurate detection and anal. of base sequence are performed in an automated fashion. The base sequence anal. chip is equipped with multiple detection electrodes formed on a baseplate and carrying immobilized DNA probe complementary to a target base sequence as an object for detection, multiple counter electrodes formed on a baseplate and not carrying immobilized DNA probe complementary to a target base sequence as an object for detection, a potentiostat formed on a baseplate for measuring the electrochem. signals of the multiple electrodes or multiple counter electrodes, a current/voltage converter, an A/D converter, a peak extraction circuit, a differentiator formed on a baseplate for subtracting the peak extraction value of the counter electrode from the peak extraction value of the peak extraction circuit, and a decode/control circuit for simultaneously controlling the measurements by the potentiostats for the detection electrodes and the counter electrodes , and controlling the subtraction calcn. of the differentiator. Diagrams describing the apparatus assembly and the operation flow are given.

L8 ANSWER 26 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1009726 CAPLUS
DOCUMENT NUMBER: 142:3097
TITLE: Electrical detection of analyte binding to probe immobilized on circuit surface carrying electrically conductive nanoparticles
INVENTOR(S): Franzen, Jochen; Baum, Hans-Jakob
PATENT ASSIGNEE(S): Bruker Daltonik GmbH, Germany
SOURCE: Brit. UK Pat. Appl., 22 pp.
CODEN: BAXXDU
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2401948	A1	20041124	GB 2004-9246	20040426
GB 2401948	B2	20060823		
DE 10319155	A1	20041125	DE 2003-10319155	20030429
US 2004235028	A1	20041125	US 2004-824656	20040414

PRIORITY APPLN. INFO.: DE 2003-10319155 A 20030429

AB The invention relates to the detection of the binding of analyte mols., for example biopolymer mols., to immobilized capture substance mols. The objective of the invention is to find a simple and inexpensive method to directly read with a high degree of sensitivity the binding of analyte mols. to immobilized probe mols. on a chip as an elec. signal. In a first aspect of the invention,

there is provided a method of measuring the binding of an analyte mol. to a probe substance comprising the steps of: providing a probe substance which is immobilized in spatial proximity to a circuit surface; forming a complex comprising the probe substance, the analyte mol. and an elec. conductive nanoparticle, wherein the nanoparticle acts elec. on a circuit of the circuit surface by current generation and/or by a change in capacitance; and detecting an elec. change in the circuit to measure the binding of the analyte mol. to the probe mol. The invention consists in binding elec. conductive nanoparticles together with the analyte mols. to the 'immobilized' probe mols., and allowing the nanoparticles to exert elec. effects on elec. circuits arranged nearby by means of current generation or a capacitance change. The nanoparticles exert a capacitive or current generating (after electrochem. voltages and/or contacts have been formed) elec. effect on the electronic circuits, so that a change in the control behavior of the circuits makes the binding of analyte mols. via the co-bound nanoparticles measurable and hence simple to read out. Figure 1 exhibits an example of a multiple step method which relates to the detection of DNA hybridizations:. Another example of a multiple step method relates to the detection of certain proteins in the analyte liquid Here, use is made of antibodies which specifically affinity bind certain proteins to the surface via so-called binding motifs.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 27 OF 52 COMPENDEX COPYRIGHT 2006 EEI on STN

ACCESSION NUMBER: 2004(39):4481 COMPENDEX

TITLE: Room temperature operation of a coulomb blockade sensor fabricated by self-assembled gold nanoparticles using deoxyribonucleic acid hybridization.

AUTHOR: Chen, Chun-Chi (National Nano Device Laboratories, Hsinchu 300, Taiwan); Tsai, Chien-Ying; Ko, Fu-Hsiang; Pun, Chung-Ching; Chen, Hsuen-Li; Chen, Ping-Hei

SOURCE: Japanese Journal of Applied Physics, Part 1: Regular Papers and Short Notes and Review Papers v 43 n 6 B June 2004 2004.p 3843-3848
CODEN: JAPNDE ISSN: 0021-4922

PUBLICATION YEAR: 2004

DOCUMENT TYPE: Journal

TREATMENT CODE: Experimental

LANGUAGE: English

AN 2004(39):4481 COMPENDEX

AB Molecules of 3-mercaptopropyltrimethoxysilane react with gold nanoparticles to form a gold monolayer on a silicon dioxide substrate. The 12-mer capture Deoxyribonucleic acid (DNA) self-assembles with the nanometer-sized gold particles. Prior to DNA hybridization, a capture DNA produced via hybridization of the target and probe oligonucleotides is covalently bonded to the gold particles. In addition, the probe oligonucleotide containing a thiol group can self-assemble with additional gold nanoparticles, and multilayered structures are thereby fabricated. The device, assembled only with gold nanoparticles and without DNA immobilization, has no quantum effect conductivity, while a DNA sensor assembled from 4nm gold nanoparticles and oligonucleotides exhibits Coulomb blockade. The measurement of the tunneling current as a function of applied voltage for the Coulomb blockade DNA sensor is reproducible. Using 14 nm gold nanoparticles instead, the Coulomb blockade for the DNA sensor only occurs at temperatures below

150 K. 13 Refs.

L8 ANSWER 28 OF 52 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2004:8138704 INSPEC
DOCUMENT NUMBER: A2004-23-8780B-011; B2004-11-7230J-043
TITLE: Electrochemical gene detection using multielectrode array DNA chip
AUTHOR: Yung-Sung Choi; Dae-Hee Park (Sch. of Electr., Electron. & Inf. Eng., Wonkwang Univ., Ihksan, South Korea)
SOURCE: Journal of the Korean Physical Society (June 2004), vol.44, no.6, p. 1556-9, 15 refs.
CODEN: KPSJAS, ISSN: 0374-4884
SICI: 0374-4884(200406)44:6L.1556:EGDU;1-0
Published by: Korean Phys. Soc, South Korea
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: Korea, Democratic Peoples Republic of
LANGUAGE: English
AN 2004:8138704 INSPEC DN A2004-23-8780B-011; B2004-11-7230J-043
AB In this study, a DNA chip with a microelectrode array was fabricated using microfabrication technology. Several probe DNAs consisting of mercaptohexyl moiety at their 5'-end were immobilized on the gold electrodes by using a DNA arrayer. Then target DNA molecules were hybridized and reacted with Hoechst 33258, which is a DNA minor groove binder and electrochemically active dye. Linear sweep voltammetry or cyclic voltammetry showed a difference between the target DNA and the control DNA in the anodic peak current values. This difference was derived from Hoechst 33258 concentrated at the electrode surface through association with the formed hybrid. We suggested that this DNA chip can recognize the specific gene sequences

L8 ANSWER 29 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:712765 CAPLUS
DOCUMENT NUMBER: 142:235928
TITLE: Imaging of antibody microarray by scanning electrochemical microscopy with shear force feedback regulation of substrate-probe distance
AUTHOR(S): Hirano, Yu; Mase, Yoshiaki; Oyamatsu, Daisuke; Yasukawa, Tomoyuki; Shiku, Hitoshi; Matsue, Tomokazu
CORPORATE SOURCE: Graduate School of Engineering, Tohoku University, Sendai, Miyagi, 980-8578, Japan
SOURCE: Chemical Sensors (2004), 20(Suppl. B), 754-755
CODEN: KAGSEU
PUBLISHER: Denki Kagakkai Kagaku Sensa Kenkyukai
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The competitive enzyme linked immunosorbent assay (ELISA) of di-Bu phthalate (DBP), a plasticizer, was carried out using a scanning electrochem. microscope (SECM) with the regulation of substrate probe distance. The dithered microelectrode of the SECM probe detects the shear force at the nanometer scale. The shear force was monitored with a tuning fork type quartz crystal and used as the feedback control to maintain the probe at a constant distance from the substrate surface. The regulation of substrate probe distance results in improvement in the sensitivity and reproducibility for SECM images. For ELISA, the antibodies immobilized to surface of Au array electrodes, trap DBP and enzyme labeled antigen for competitive reactions in sample solns. This system allows to the

simultaneous detection of the topog. images and current images based on the enzyme reaction.
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 30 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 7
ACCESSION NUMBER: 2003:1011271 CAPLUS
DOCUMENT NUMBER: 140:159942
TITLE: Electrical detection of viral DNA using ultramicroelectrode arrays
AUTHOR(S): Nebling, Eric; Grunwald, Thomas; Albers, Joerg; Schaefer, Peter; Hintsche, Rainer
CORPORATE SOURCE: Fraunhofer Institute for Silicon Technology (ISIT), Itzehoe, D-25524, Germany
SOURCE: Analytical Chemistry (2004), 76(3), 689-696
CODEN: ANCHAM; ISSN: 0003-2700
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A fully elec. array for voltammetric detection of redox mols. produced by enzyme-labeled affinity binding complexes is shown. The electronic detection is based on ultramicroelectrode arrays manufactured in silicon technol. The 200-μm circular array positions have 800-nm-wide interdigitated gold ultramicroelectrodes embedded in silicon dioxide. Immobilization of oligonucleotide capture probes onto the gold electrodes surfaces is accomplished via thiol-gold self-assembling. Spatial separation of probes at different array positions is controlled by polymeric rings around each array position. The affinity bound complexes are labeled with alkaline phosphatase, which converts the electrochem. inactive substrate 4-aminophenyl phosphate into the active 4-hydroxyaniline (HA). The nanoscaled electrodes are used to perform a sensitive detection of enzyme activity by signal enhancing redox recycling of HA resulting in local and position-specific current signals. Multiplexing and serial readout is realized using a CMOS ASIC module and a computer-controlled multichannel potentiostat. The principle of the silicon-based elec. biochip array is shown for different exptl. setups and for the detection of virus DNA in real unpurified multiplex PCR samples. The fast and quant. electronic multicomponent anal. for all kinds of affinity assays is robust and particle tolerant.
REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 31 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 8
ACCESSION NUMBER: 2004:431872 CAPLUS
DOCUMENT NUMBER: 141:65842
TITLE: Single nucleotide polymorphism analysis by chip-based hybridization and direct current electrical detection of gold-labeled DNA
AUTHOR(S): Burmeister, Jens; Bazilyanska, Viktoria; Grothe, Klaus; Koehler, Burkhard; Dorn, Ingmar; Warner, Brian D.; Diessel, Edgar
CORPORATE SOURCE: Competence Center Biophysics, Bayer Technology Services GmbH, Leverkusen, 51368, Germany
SOURCE: Analytical and Bioanalytical Chemistry (2004), 379(3), 391-398
CODEN: ABCNBP; ISSN: 1618-2642
PUBLISHER: Springer-Verlag
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Single nucleotide polymorphism (SNP) anal. at the point of care requires a

low cost detection technol. that is capable of miniaturization, multiplexing, and high sensitivity. D.c. elec. detection (DCED) of DNA following nanoparticle labeling and silver enhancement is a promising candidate technol. for point-of-care diagnostics. SNP anal. in PCR products from patient samples using DCED is presented for the first time, taking this platform technol. a step closer to practical application. A silane functionalized polymer was developed for coating of biochip surfaces. This polymeric coating is stable under harsh conditions and has exceptionally high binding capacity. Allele-specific oligonucleotide probes were immobilized on chips coated with this polymer. Biotinylated PCR products of the human cholesteryl ester transfer protein gene from different patients were hybridized to the chips, labeled with gold nanoparticles, and autometallog. enhanced. The chips were scanned for d.c. elec. resistance by applying movable electrodes to the surface. Eighteen of 19 patient samples were assigned the correct genotype. These results demonstrate that SNP anal. of patient samples is feasible with DCED.

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 32 OF 52 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2004:8155094 INSPEC
DOCUMENT NUMBER: A2004-24-8280-006; B2004-12-2550G-035
TITLE: Electrochemical detection of single nucleotide polymorphism (SNP) using microelectrode array on a DNA chip
AUTHOR: Yong-Sung Choi; Young-Soo Kwon; Dae-Hee Park
SOURCE: Transactions of the Korean Institute of Electrical Engineers, C (May 2004), vol.53, no.5, p. 286-92, 15 refs.
CODEN: CHNODD, ISSN: 1229-246X
SICI: 1229-246X(200405)53:5L.286:EDSN;1-G
Published by: Korean Inst. Electr. Eng, South Korea
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: Korea, Democratic Peoples Republic of
LANGUAGE: Korean
AN 2004:8155094 INSPEC DN A2004-24-8280-006; B2004-12-2550G-035
AB In this study, an integrated microelectrode array was fabricated on glass slide using microfabrication technology. Probe DNAs consisting of mercaptohexyl moiety at their 5-end were spotted on the gold electrode using micropipette or DNA arrayer utilizing the affinity between gold and sulfur. Cyclic voltammetry in 5 mM ferricyanide/ferrocyanide solution at 100 mV/s confirmed the immobilization of probe DNA on the gold electrodes. When several DNAs were detected electrochemically, there was a difference between target DNA and control DNA in the anodic peak current values. It was derived from specific binding of Hoechst 33258 to the double stranded DNA due to hybridization of target DNA. It suggested that this DNA chip could recognize the sequence specific genes. It suggested that multichannel electrochemical DNA microarray is useful to develop a portable device for clinical gene diagnostic system

L8 ANSWER 33 OF 52 COMPENDEX COPYRIGHT 2006 EEI on STN DUPLICATE 9
ACCESSION NUMBER: 2005(33):9607 COMPENDEX
TITLE: Electrical detection of protein using gold nanoparticles and nanogap electrodes.
AUTHOR: Tsai, C.-Y. (Thermal MEMS Laboratory National Taiwan University, Taipei, 10617, Taiwan); Chang, T.-L.;

Chen, P.-H.; Chen, C.-C.; Ko, F.-H.
MEETING TITLE: 2004 International Microprocesses and Nanotechnology Conference.
MEETING ORGANIZER: The Japan Society of Applied Physics; IEEE Electron Device Society
MEETING LOCATION: Osaka, Japan
MEETING DATE: 26 Oct 2004-29 Oct 2004
SOURCE: Digest of Papers - Microprocesses and Nanotechnology 2004 2004.p 244-245, (IEEE cat n 04EX934)
SOURCE: Digest of Papers - Microprocesses and Nanotechnology 2004
ISBN: 4990247205
PUBLICATION YEAR: 2004
MEETING NUMBER: 65347
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 2005(33):9607 COMPENDEX
AB A electrical detection of protein is developed in this paper by using self-assembled multilayer gold nanoparticles (AuNP) onto SiO2/Si substrate between gold electrodes. The electrical measurements were performed at room temperature using a probe station. The first monolayer of AuNP is formed by immobilizing AuNP on SiO2 substrate using 3-Aminopropyltrimethoxysilane (APTMS) molecules. Then, monoclonal antibody is immobilized on the top surface of the first monolayer of AuNP. The second layer of AuNP is formed through specific binding among target antigen (Hepatitis C virus, (HCV)), monoclonal antibody (2B2 by GBC in Taiwan), and conjugate of gold nanoprticle with polycolnal antibody (GP by GBC in Taiwan). The target antigen is sandwiched between monoclonal antibody and conjugate of AuNP-polycolnal antibody. The system relies on gold nanoparticles probes and nano-gap-electrode device with antibodies that specifically binding a protein target of antigen and antibodies that can sandwich the target captured by the nanoparticles probes. As shown in Fig.1, the average diameter of gold nanoparticles is around 15 nm. A significant difference in IV curves of monolayer and multilayer of AuNP can be used to identify the target antigen in the tested sample. No significant current, which is less than 1 pA, can be measured for the monolayer of AuNP. Once the binding among antigen and antibodies occurs, a peak electrical current can be observed at V approx.= 5.9V.

L8 ANSWER 34 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:719670 CAPLUS
DOCUMENT NUMBER: 142:151101
TITLE: Simultaneous electrochemical immunoassay with protein microarray
AUTHOR(S): Ogasawara, Daichi; Hirano, Yu; Yasukawa, Tomoyuki; Shiku, Hitoshi; Matsue, Tomokazu; Kobori, Kiichirou; Ushizawa, Kouji; Kawabata, Souhei
CORPORATE SOURCE: Graduate School of Environmental Studies, Tohoku University, Aramaki, Aoba, Sendai, 980-8579, Japan
SOURCE: Chemical Sensors (2004), 20(Suppl. A), 139-141
CODEN: KAGSEU
PUBLISHER: Denki Kagakkai Kagaku Sensa Kenkyukai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB We have investigated the simultaneous electrochem. immunoassay by assembling a chip electrode and a protein-arrayed chip into a chip holder. This novel "chip to chip detection" ultimately allows that microelectrodes

on a chip electrode and cavities for the protein immobilization on a protein arrayed chip are exactly faced each other. The sandwich immunoassay was conducted on the cavities using a model protein, pepsinogen B (PG2) labeled with a horseradish peroxidase (HRP)-conjugated antibody (anti-mouse IgG). The measurement solution contained 0.5 mM ferrocenemethanol (FMA) and 0.1 mM H2O2 as the substrate of HRP. To detect the antigen, amperometry was used at a constant potential (120 mV). Oxidized form of FMA generated by the enzyme reaction of HRP in each cavity was simultaneously detected by the corresponding electrodes addressed there. The current response was sensitive to the concentration of PG2 in the range of 1-30 ng/mL.

L8 ANSWER 35 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:454920 CAPLUS
DOCUMENT NUMBER: 139:32899
TITLE: Electrochemical method for detecting water-borne pathogens
INVENTOR(S): Fritsch, Ingrid; Beitle, Robert; Aguilar, Zoraida
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U. S. Ser. No. 978,734.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 2003108922	A1	20030612	US 2002-252342		20020923
US 2002058279	A1	20020516	US 2001-978734		20011015
US 6887714	B2	20050503			
PRIORITY APPLN. INFO.:			US 2000-240691P	P	20001016
			US 2001-978734	A2	20011015

AB A novel, surface immobilization electrochem. assay allows for rapid, accurate and highly sensitive detection of microorganisms and biol. mols. Known surface immobilization methods are utilized to bind an analyte to a surface. A binding material with a covalently attached electroactive complex generates elec. current in the presence of analyte. An electrode is used to detect the current, that is directly related to the concentration of analyte. The invention is especially suitable for detection of Cryptosporidium parvum. A sandwich-type immunoassay was performed in which a monoclonal IgM antibody to C. parvum was covalently attached via carboduimide coupling to 11-mercapto-1-undecanol and 11-mercapto-1-undecanoic acid self-assembled monolayers on gold macrochips, followed by capture of C. parvum oocysts from the sample solution, and attachment of a secondary antibody, labeled with alkaline phosphatase (AP). Bare gold macroelectrode and a microelectrode were used to detect p-aminophenol enzymically generated by the AP immobilized on the modified chip from a solution of 4 mM p-aminophenyl phosphate in 0.1 M Tris buffer (pH = 9). The detection limit for the microelectrode detection was 7 oocysts/L.

L8 ANSWER 36 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:761867 CAPLUS
DOCUMENT NUMBER: 139:273198
TITLE: Nucleic acid hybridization detection apparatus comprising DNA probe immobilized electrodes
INVENTOR(S): Yabe, Tomoaki; Hashimoto, Koji; Ishiuchi, Hidemi;

Miyamoto, Junichi
PATENT ASSIGNEE(S): Toshiba Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003274945	A2	20030930	JP 2002-87049	20020326

PRIORITY APPLN. INFO.: JP 2002-87049 20020326

AB This invention provides a gene chip apparatus for detection of nucleic acid hybridization. The apparatus comprises DNA probe immobilized electrodes, and a device for generating reference elec. current corresponding to that in the presence and absence of hybridization. A device for elec. current amplification and current-voltage converter are also a part. Diagrams for the apparatus were also given.

L8 ANSWER 37 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:443702 CAPLUS
DOCUMENT NUMBER: 139:19293
TITLE: Electrochemical DNA sensor using genetically engineered thermostable pyrroloquinoline quinone glucose dehydrogenase-avidin conjugate
INVENTOR(S): Hayade, Hiroshi; Ikebukuro, Kazunori
PATENT ASSIGNEE(S): Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003164293	A2	20030610	JP 2002-111322	20020309

PRIORITY APPLN. INFO.: JP 2001-326968 A 20010918

AB A method for DNA detection using oxidoreductase activity as signal, is disclosed. An oxidoreductase using FAD or pyrroloquinoline (PQQ) as coenzyme, and using carbohydrate as substrate, such as glucose dehydrogenase (GDH), can be used. Avidin-conjugated GDH, streptavidin linked via crosslinking agent, is added to the mixture after hybridization of immobilized DNA probes with the biotinylated target DNA. A new amperometric DNA sensor was constructed using a pyrroloquinoline quinone glucose dehydrogenase ((PQQ)GDH) conjugated with avidin. The aim was to specifically detect the DNA sequence of the invA virulence gene from the pathogenic bacterium Salmonella. Probe DNA with a sequence complementary to that of a specific fragment of the invA gene was immobilized onto a carbon paste electrode. After hybridization with biotinylated target DNA, (PQQ)GDH-avidin conjugate was added and the resulting elec. current was measured. The elec. current is generated from glucose oxidization catalyzed by (PQQ)GDH via 1-methoxyphenazine methosulfate (m-PMS) electron mediator. The sensor response increased with the addition of glucose and in the presence of 6.3 mM glucose the response increased with increasing DNA in the range 5.0+10-8-1.0+10-5 M. Genetically engineered thermostable pyrroloquinoline quinone glucose dehydrogenase (S415CGDH) was also used for labeling probe DNA and

amperometric DNA sensor was constructed and utilized for the detection of PCR amplified Salmonella virulence invA gene. The invA gene from Salmonella which accounts for many cases of food poisoning was targeted and the DNA bearing a specific sequence complementary to the invA gene was immobilized onto an Au electrode as a capture DNA. S415CGDH labeled probe DNA was hybridized with the immobilized DNA at 60°C for 10 min and then the resulting elec. current generated from S415CGDH by glucose addition was measured. An engineered soluble PQQGDH with subunits linked via disulfide bonding was used as DNA sensor for detection of Salmonella, or single-nucleotide polymorphism (SNP) in peroxisome proliferator-activated receptor (PPAR) γ2 gene.

L8 ANSWER 38 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:165364 CAPLUS
DOCUMENT NUMBER: 138:183467
TITLE: Biochip with improved detection sensitivity
INVENTOR(S): Yasuda, Shinzo; Tajiri, Kozo; Masuda, Takeshi; Yoshida, Satoru; Dobashi, Yukio; Mukoyama, Shoji
PATENT ASSIGNEE(S): Nippon Shokubai Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003066042	A2	20030305	JP 2001-256571	20010827
PRIORITY APPLN. INFO.:			JP 2001-256571	20010827

AB A biochip with an improved detection sensitivity is provided. In this biochip, an adsorption sheet and a plate base material are inserted between a pair of electrodes to which a fixed elec. potential is applied. Open holes are created on the plate base material in such a way that they possess their axises in the direction of the elec. current which flows between the electrodes. DNA probes are chemical bound to the inner walls of the open holes. Diagrams describing the biochip assembly are given.

L8 ANSWER 39 OF 52 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2005:8515480 INSPEC
DOCUMENT NUMBER: B2005-09-2230B-005
TITLE: Development of new DNA chip and genome detection using an indicator-free target DNA
AUTHOR: Yong-Sung Choi; Dae-Hee Park; Young-Soo Kwon; Tomoji Kawai
SOURCE: Transactions of the Korean Institute of Electrical Engineers, C (Aug. 2003), vol.52, no.8, p. 365-70, 13 refs.
CODEN: CHNODD, ISSN: 1229-246X
SICI: 1229-246X(200308)52:8L.365:DCGD;1-N
Published by: Korean Inst. Electr. Eng, South Korea
DOCUMENT TYPE: Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: Korea, Democratic Peoples Republic of
LANGUAGE: Korean
AN 2005:8515480 INSPEC DN B2005-09-2230B-005
AB This research aims to develop an indicator-free DNA chip using micro-fabrication technology. At first, we fabricated

a DNA microarray by lithography technology. Several probe DNA consisting of thiol group at their 5-end were immobilized on the gold electrodes. Then indicator-free target DNA was hybridized by an electrical force and measured electrochemically in potassium ferricyanide solution. Redox peak of cyclic-voltammogram showed a difference between target DNA and mismatched DNA in an anodic peak current. Therefore, it is able to detect various genes electrochemically after immobilization of various probe DNA and hybridization of indicator-free DNA on the electrodes simultaneously. It is suggested that this DNA chip could recognize the sequence specific genes

L8 ANSWER 40 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:833000 CAPLUS
DOCUMENT NUMBER: 137:334864
TITLE: Molecular detection chip including MOSFET, and a molecular detection device employing the chip
INVENTOR(S): Lim, Geun-Bae; Park, Chin-Sung; Cho, Yoon-Kyoung; Kim, Sun-Hee
PATENT ASSIGNEE(S): Samsung Electronics Co., Ltd., S. Korea
SOURCE: PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002086162	A1	20021031	WO 2002-KR746	20020423
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
KR 2002082357	A	20021031	KR 2001-21752	20010423
KR 2002090734	A	20021205	KR 2001-29729	20010529
KR 2003048178	A	20030619	KR 2001-78010	20011211
EP 1392860	A1	20040303	EP 2002-720663	20020423
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004520595	T2	20040708	JP 2002-583675	20020423
US 2003102510	A1	20030605	US 2002-239736	20020925

PRIORITY APPLN. INFO.:

KR 2001-21752	A	20010423
KR 2001-29729	A	20010529
KR 2001-78010	A	20011211
WO 2002-KR746	W	20020423

AB A mol. detection chip including a metal oxide silicon-field effect transistor (MOSFET) on sidewalls of a micro-fluid channel and a mol. detection device including the mol. detection chip are provided. A mol. detection method, particularly, qualification methods for the immobilization of mol. probes and the binding of a target sample to the mol. probes, using the mol. detection device, and a nucleic acid mutation assay device and method are also provided. The formation of the MOSFET on the sidewalls of the micro-fluid channel makes easier to highly integrate a mol. detection

chip. In addition, immobilization of probes directly on the surface of a gate electrode ensures the mol. detection chip to check for the immobilization of probes and coupling of a target mol. to the probes in situ. According to the present invention, a heater, a thermal sensor, and a DNA sensor are all built in the micro-fluid channel so that temperature-base nucleic acid denaturation can be detected in real time. A variety of nucleic acids mutations, particularly single nucleotide polymorphisms (SNPs), can be effectively detected.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 41 OF 52 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2002:7271449 INSPEC
DOCUMENT NUMBER: A2002-13-8780B-004; B2002-06-7230J-027
TITLE: Electrochemical measurement for analysis of DNA sequence
AUTHOR: Sungbo Cho; Jinseop Hong; Youngmi Kim Pak; Jungho Pak
SOURCE: Transactions of the Korean Institute of Electrical Engineers, C (Feb. 2002), vol.51, no.2, p. 92-7, 20 refs.
CODEN: CHNODD, ISSN: 1229-246X
SICI: 1229-246X(200202)51:2L.92:EMAS;1-T
Published by: Korean Inst. Electr. Eng, South Korea
DOCUMENT TYPE: Journal
TREATMENT CODE: Practical
COUNTRY: Korea, Democratic Peoples Republic of
LANGUAGE: Korean
AN 2002:7271449 INSPEC DN A2002-13-8780B-004; B2002-06-7230J-027
AB One of the important roles of a DNA chip is the capability of detecting genetic diseases and mutations by analyzing DNA sequence. For a successful electrochemical genotyping, several aspects should be considered including the chemical treatment of electrode surface, DNA immobilization on electrode, hybridization, choice of an intercalator to be selectively bound to double standard DNA, and an equipment for detecting and analyzing the output signal. Au was used as the electrode material, 2-mercaptoethanol was used for linking DNA to Au electrode, and methylene blue was used as an indicator that can be bound to a double stranded DNA selectively. From the analysis of reductive current of this indicator that was bound to a double stranded DNA on an electrode , a normal double stranded DNA was able to be distinguished from a single stranded DNA in just a few seconds. Also, it was found that the peak reduction current of indicator is proportional to the concentration of target DNA to be hybridized with probe DNA. Therefore, it is possible to realize a simple and cheap DNA sensor using the electrochemical measurement for genotyping

L8 ANSWER 42 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:513700 CAPLUS
DOCUMENT NUMBER: 138:19981
TITLE: Optimum next generation DNA chips for DNA diagnosis
AUTHOR(S): Takenaka, Shigeori
CORPORATE SOURCE: Graduate School of Engineering, Kyushu University, Japan
SOURCE: Biobencha (2002), 2(3), 58-64
CODEN: BIOBC8; ISSN: 1346-5376
PUBLISHER: Yodosha

DOCUMENT TYPE: Journal; General Review
LANGUAGE: Japanese
AB A review. The development of DNA chip technologies with specific anal. purposes was discussed. Current status in the development of DNA chips with electrochem. sensoring systems was described. Xanthon Xpression Anal. System using oligonucleotide probe-immobilized indium tin oxide electrode, the eSensor using ferrocene as sensoring mol. of the signaling probe, the ECA chip using DNA intercalators mols. such as ferrocenyl naphthalene diimide for sensoring were described as specific examples.

L8 ANSWER 43 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:748031 CAPLUS
DOCUMENT NUMBER: 135:283942
TITLE: Biosensors for detection of nucleic acid hybridization by monitoring of oxidation-reduction recycling with enzyme labeled probes
INVENTOR(S): Frey, Alexander; Thewes, Roland
PATENT ASSIGNEE(S): Infineon Technologies Ag, Germany
SOURCE: PCT Int. Appl., 66 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001075141	A2	20011011	WO 2001-DE1241	20010329
WO 2001075141	A3	20020510		
W: JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
DE 10015816	A1	20011018	DE 2000-10015816	20000330
EP 1272850	A2	20030108	EP 2001-927637	20010329
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2003529770	T2	20031007	JP 2001-573015	20010329
JP 3806037	B2	20060809		
US 2004014054	A1	20040122	US 2003-239622	20030116

PRIORITY APPLN. INFO.: DE 2000-10015816 A 20000330
WO 2001-DE1241 W 20010329

AB The invention relates to a biosensor chip that is provided with a first electrode and a second electrode. The first electrode is provided with a holding area for holding probe mols. which can bind macromol. biopolymers. The invention also relates to an integrated elec. differentiating circuit by means of which an elec. current can be detected and can be differentiated according to time, whereby said current is generated during a reduction/oxidation recycling procedure.

L8 ANSWER 44 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:129075 CAPLUS
DOCUMENT NUMBER: 134:292318
TITLE: On applicability of laccase as label in the mediated and mediatorless electroimmunoassay: effect of distance on the direct electron transfer between laccase and electrode
AUTHOR(S): Kuznetsov, B. A.; Shumakovich, G. P.; Koroleva, O. V.; Yaropolov, A. I.

CORPORATE SOURCE: Leninsky prospekt 33, A. N. Bakh Inst. Biochem., Acad. Sci. U.S.S.R., Moscow, Russia
SOURCE: Biosensors & Bioelectronics (2001), 16(1-2), 73-84
CODEN: BBIOE4; ISSN: 0956-5663
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Applicability of laccase as enzyme-label has been investigated. It was shown that the property of laccase to catalyze the oxygen electroredn. at an electrode allows to develop a mediatorless and pseudoreagentless electro-enzyme-immunoassay (EEIA). In this case the electrode acts as an electron-donor substrate. When the bioelectrocatalytic reaction takes place, some elec. charge is collected on the electrode. A method of determination of the electrode charge as well as the concentration of oxidized form of the mediator at the electrode surface has been elaborated. For this aim a technique of the measurement of current-surge was employed.
Human IgG and insulin were taken as model in this investigation. A back titration schemes without any mediator and in the presence of o-carboxybenzoylferrocene as a mediator was applied. The antibody carbon-black and the antigen glassy-carbon electrodes were used. The limits of detection were found to be 0.3 and 1.6 nM, resp. The advantage of the mediatorless assay is that the charge leakage is imperceptible by open circuit for a long time and the accumulation of the charge occurs linearly with time. The charge accumulation for a long time allows to diminish the limit of detection. However, there is a limitation of the method. The direct electron transfer slows down with increasing the distance between the enzyme mol. and the electrode surface. This effect reduces the sensitivity of the method. The decrease of the electron transfer rate with distance has been estimated Monolayer of Hb dividing the laccase mol. from the electrode surface decreases the rate by four times. The electron transfer rate for the antibody electrode with associated antigen-laccase conjugate is less than that for the analogous electrode, covered with monolayer of covalently attached laccase, by 210 times. The current-surge peak was expected to decrease with distance by an equation of the form I=I0 exp[-r/r0]. The parameter r0 is equal to 2.2±0.8 nm. The possibility of the sensitivity increase in the mediatorless mode by 'wiring' through the multilayer film of immunoproteins immobilized on the electrode is discussed.

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 45 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:377049 CAPLUS
DOCUMENT NUMBER: 133:2205
TITLE: Determination of specific binding pair using oxygen microelectrode and apparatus therefor
INVENTOR(S): Hoshino, Fumihiko; Asami, Osamu; Nakane, Hideo; Yamada, Yukio
PATENT ASSIGNEE(S): Toyota Central Research and Development Laboratories, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000155122	A2	20000606	JP 1998-328403	19981118

JP 3395673	B2	20030414		
US 2001006825	A1	20010705	US 1999-440585	19991115
US 6410251	B2	20020625		

PRIORITY APPLN. INFO.: JP 1998-328403 A 19981118

AB A specific binding pair, e.g. antigen-antibody, receptor-ligand, etc., is determined by (1) labeling either of the members of the pair or a substance which is specifically bound to the members with a redox catalyst and (2) reacting the labeled product with a substrate of the catalyst on a porous support in contact with sensor surface of an O electrode. Also claimed is apparatus for the method. A urine sample containing albumin was incubated with glucose oxidase-labeled mouse anti-human albumin monoclonal antibody and the reaction mixture was passed through a human albumin-immobilized column to remove unreacted antibody . The solution containing only immune complexes was dropped onto an apparatus comprising an O electrode which was supported on a nonabsorbing substrate and covered with a filter paper impregnated with a glucose solution and dried to measure output current.

L8 ANSWER 46 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:356683 CAPLUS
DOCUMENT NUMBER: 133:1473
TITLE: Amplified-type DNA detection method using intercalator
INVENTOR(S): Takenaka, Shigeori; Takagi, Makoto
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000146894	A2	20000526	JP 1998-328872	19981104

PRIORITY APPLN. INFO.: JP 1998-328872 19981104

AB A highly sensitive method is provided for detecting a DNA with a particular sequence in a sample by measuring an elec. current generated on an electrode upon making the sample DNA contact with a probe DNA on the electrode in the presence of an intercalator. The sample DNA dissociated into a single stranded chain is made contact with the probe DNA fixed on the electrode in the presence of a substrate (e.g., glucose, cholesterol), an oxidoreductase (e.g, glucose oxidase, cholesterol oxidase, resp.) capable of forming its reduced form upon reacting with the substrate, and an elec. activity-sewed in-type intercalator (e.g., ferrocene-modified intercalator). The elec. current generated through the intercalator bound with the hybrid DNA formed between the probe DNA and the sample DNA is amplified by the electron transfer between the oxidoreductase converted to its reduced form and the electrode. The sample DNA with a particular base sequence is detected by measuring this amplified elec. current. The sample DNA, dA20, was electrochem. detected by this method using dT20 fixed on the gold electrode, glucose, glucose oxidase and ferrocene-sewed in-type intercalator.

L8 ANSWER 47 OF 52 COMPENDEX COPYRIGHT 2006 EEI on STN DUPLICATE 10

ACCESSION NUMBER: 2000(30):4654 COMPENDEX
TITLE: Fully multiplexed CMOS biochip for DNA analysis.

AUTHOR: Swanson, Paul (Nanogen Inc, San Diego, CA, USA); Gelbart, Richard; Atlas, Eugene; Yang, Li; Grogan, Tammy; Butler, William F.; Ackley, Donald E.; Sheldon, Edward
MEETING TITLE: Transducers '99 - 10th International Conference on Solid-State Sensors and Actuators.
MEETING LOCATION: Sendai, Jpn
MEETING DATE: 07 Jun 2099-10 Jun 2099
SOURCE: Sensors and Actuators, B: Chemical v 64 n 1 2000.p 22-30
CODEN: SABCEB ISSN: 0925-4005
PUBLICATION YEAR: 2000
MEETING NUMBER: 56940
DOCUMENT TYPE: Journal
TREATMENT CODE: Application; Experimental
LANGUAGE: English

AN 2000(30):4654 COMPENDEX

AB We have developed a technology that brings together electronically active semiconductor chips with biomedical assays or tests. By creating an array of electrodes that can be individually addressed, it is possible to manipulate DNA and other biological molecules to perform bioassays in a number of different formats. Recently, we have fabricated and tested chips that support independent, electronically driven reactions at 400 or more sites. To control these sites, we have utilized a CMOS architecture which incorporates row and column addressing, and active current control and self-test at each site. We have developed an electronically driven hybridization assay for an application in genetic identification that takes advantage of the large number of available assay locations. To perform the assay, sample DNA is electrophoretically propelled and hybridized to an immobilized DNA probe on the chip and to a fluorophore-labeled DNA probe in solution. Detection of a positive assay result depends on light emitted by the fluorophore-labeled probe in a hybridization complex that also contains the immobilized capture probe and the sample DNA. The fluorophore is excited by light from a diode laser, which is coupled into the chip by a unique cartridge design that incorporates a polymer waveguide for dark field illumination.The light emitted by fluorophores is detected by a CCD camera.The present generation of chips will potentially enable a wide range of applications including genetic identification tests, detection of bacteria and other infectious agents, assays for genetic diseases, examination of the products of many genes and screening for potential drugs.(Author abstract) 10 Refs.

L8 ANSWER 48 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:513742 CAPLUS
DOCUMENT NUMBER: 122:260586
TITLE: An electrochemical enzymic complementation immunoassay
INVENTOR(S): Brown, Mary E.; Kuhn, Lance S.; Mcenroe, Robert J.; Muddiman, Rebecca W.; Ochs, Mary Luann; Hurrell, John G. R.; Guder, Hans, Joachim
PATENT ASSIGNEE(S): Boehringer Mannheim Corp., USA
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

WO 9506115 A1 19950302 WO 1994-US9473 19940824
W: JP
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
US 5427912 A 19950627 US 1993-113548 19930827
CA 2146221 AA 19961004 CA 1995-2146221 19950403
PRIORITY APPLN. INFO.: US 1993-113548 A 19930827
AB An immunoassay diagnostic kit, method, and apparatus for electrochem. determining the concentration of an analyte in a sample is described. The novelty comprises combining an enzymic complementation immunoassay with electrochem. detection of enzymic activity. A mixture is formed which includes the sample (e.g., theophylline), an enzyme-acceptor polypeptide (such as β-galactosidase fragment), and enzyme-donor polypeptide linked to an analyte analog (e.g., the small β-galactosidase fragment linked to theophylline), a labeled substrate such as 4-(1,4,7,10-tetraoxadecyl)-1-naphthyl-β-D-galactopyranoside, and an antibody specific for the analyte to be measured. The analyte and the enzyme-donor polypeptide conjugate competitively bind to the antibody. When the enzyme-donor polypeptide conjugate is not bound to antibody, it will spontaneously combine with the enzyme acceptor polypeptide to form an active enzyme complex. The active enzyme hydrolyzes the labeled substrate, resulting in the generation of an electroactive label, which can then be oxidized at the surface of an electrode. A current resulting from the oxidation of the electroactive compound can be measured and correlated to the concentration of the analyte in the sample.

L8 ANSWER 49 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:809416 CAPLUS
DOCUMENT NUMBER: 123:192880
TITLE: Novel nonseparation sandwich-type electrochemical enzyme immunoassay system for detecting marker proteins in undiluted blood
AUTHOR(S): Meyerhoff, Mark E.; Duan, Chuanming; Meusel, Markus
CORPORATE SOURCE: Dep. Chem., Univ. Michigan, Ann Arbor, MI, 48109, USA
SOURCE: Clinical Chemistry (Washington, D. C.) (1995), 41(9), 1378-84
CODEN: CLCHAU; ISSN: 0009-9147
PUBLISHER: American Association for Clinical Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A novel nonsepn. electrochem. enzyme immunoassay (NEEIA) is described. The approach is based on preferential electrochem. measurement of surface-bound enzyme-labeled reporter antibody (E-Ab), relative to an excess of this reagent in the sample solution NEEIAs are carried out on microporous membranes coated with a thin, circular area of gold. The gold serves simultaneously as a working electrode and solid phase for immobilized capture anti-protein antibodies. In the assay, analyte protein is incubated concurrently with the Ab-coated gold surface and excess E-Ab conjugate. Detection of bound E-Ab is achieved by introducing the substrate for the enzyme through the back side of the membrane. The product of bound E-Ab is detected immediately by oxidation or reduction at the gold electrode, and the resulting current is proportional to the concentration of protein in the sample. The feasibility of the NEEIA approach is demonstrated via the detection of prostate-specific antigen in undiluted plasma samples, with alkaline phosphatase as the label. Use of multiple gold films deposited on the same porous membrane to perform simultaneous NEEIAs is also described.

L8 ANSWER 50 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 11
ACCESSION NUMBER: 1995:796755 CAPLUS
DOCUMENT NUMBER: 123:191883
TITLE: Amperometric detection of alkaline phosphatase activity at a horseradish peroxidase enzyme electrode based on activated carbon: potential application to electrochemical immunoassay
AUTHOR(S): Ho, W. O.; Athey, D.; McNeil, C. J.
CORPORATE SOURCE: Medical School, University Newcastle upon Tyne, Newcastle upon Tyne, NE2 4HH, UK
SOURCE: Biosensors & Bioelectronics (1995), 10(8), 683-91
CODEN: BBIOE4; ISSN: 0956-5663
PUBLISHER: Elsevier Advanced Technology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Amperometric detection of alkaline phosphatase activity has been achieved using 5-bromo-4-chloro-3-indolyl phosphate (BCIP) as the enzyme substrate. The production of hydrogen peroxide from the dephosphorylation of BCIP was measured using an activated carbon electrode with horseradish peroxidase immobilized to its surface by simple passive adsorption. This method was easily capable of measuring 10-12 M alkaline phosphatase and had a calculated detection limit of 2.2 x 10-14 M. The horseradish peroxidase electrode system was investigated further as a method for non-competitive electrochem. enzyme immunoassay using TSH as the model analyte. This was realized by co-immobilization to the electrode surface of both horseradish peroxidase and an anti-TSH monoclonal antibody. After addition of the analyte, a second biotinylated anti-TSH monoclonal antibody and the substrate, streptavidin-labeled alkaline phosphatase was added and the current (generated by enzyme channeling of hydrogen peroxide) measured as a function of TSH concentration Thus, the activated carbon electrode was used as a combined immunol. capture phase and amperometric detection system.

L8 ANSWER 51 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1994:265159 CAPLUS
DOCUMENT NUMBER: 120:265159
TITLE: Separation-Free Sandwich Enzyme Immunoassays Using Microporous Gold Electrodes and Self-Assembled Monolayer/Immobilized Capture Antibodies
AUTHOR(S): Duan, Chuanming; Meyerhoff, Mark E.
CORPORATE SOURCE: Department of Chemistry, University of Michigan, Ann Arbor, MI, 48109, USA
SOURCE: Analytical Chemistry (1994), 66(9), 1369-77
CODEN: ANCHAM; ISSN: 0003-2700
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A novel enzyme immunoassay for proteins is performed by designing an electrochem. detection system that enables preferential measurement of surface-bound enzyme-labeled antibody relative to the excess enzyme-labeled reagent in the bulk sample solution In this initial model system, the assay is carried out using gold-coated microporous nylon membranes (pore size 0.2 μm) which are mounted between two chambers of a diffusion cell. The membrane serves as both a solid phase for the sandwich assay and the working electrode in the three-electrode amperometric detection system. The capture monoclonal antibody is immobilized covalently on the gold side of the membrane via a self-assembled monolayer of thioctic acid. In the separation-free sandwich assay, both model analyte protein (human chorionic gonadotropin; hCG) and

alkaline phosphatase-labeled anti-hCG (ALP-Ab) are incubated simultaneously with the immobilized capture anti-hCG antibody. Surface-bound ALP-Ab is spatially resolved from the excess conjugate in the bulk sample solution by introducing the enzyme substrate (4-aminophenyl phosphate) through the back side of the porous membrane. The substrate diffuses rapidly through the porous membrane where it first encounters bound ALP-Ab at the gold surface. The enzymically generated product, aminophenol, is detected immediately by oxidation at the gold electrode (at +0.19 V vs Ag/AgCl), and the magnitude of current is directly proportional to the concentration of hCG in the sample. The response time after substrate addition is <1 min, although maximum response toward the analyte protein requires a sample/conjugate preincubation time of 30 min with the porous electrode. The assay is demonstrated to function effectively in both buffer and whole human blood with a detection limit of 2.5 units/L hCG (in blood), which is comparable to most of heterogeneous EIAs that require multiple washing steps.

L8 ANSWER 52 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1994:4020 CAPLUS
DOCUMENT NUMBER: 120:4020
TITLE: Immunosensor and method for quantitative analysis of liquids
INVENTOR(S): Heymann, Stephan; Scheller, Frieder; Micheel, Burkhard; Schoessler, Werner; Warsinke, Axel; Behrsing, Olaf
PATENT ASSIGNEE(S): Imtec Immundiagnostika GmbH, Germany
SOURCE: Ger. Offen., 4 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4214589	A1	19931111	DE 1992-4214589	19920504
DE 4214589	C2	20020620		
PRIORITY APPLN. INFO.:			DE 1992-4214589	19920504

AB The title immunosensor contains, in direct or indirect contact with the sensing element, a membrane on which complement C1q is immobilized or adsorbed as capture reagent for binding immune complexes containing the analyte. The sensor is readily regenerated by contacting it with a reagent which dissocs. the C1q complex. Thus, a regenerated cellulose membrane was activated with aminopropyltriethoxysilane and modified with glutaraldehyde for immobilization of C1q. The membrane was applied to a Pt electrode and exposed to TSH and an alkaline phosphatase-labeled monoclonal antibody to TSH, and the change in current on addition of p-aminophenyl phosphate (substrate) was measured was compared with a calibration curve to determine TSH. The sensor was regenerated with 3M KSCN.